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ABSTRACT

This document contains 13 papers from an international conference on new approaches to and implementation of lifelong vocational education and training (VET) and technical and vocational education and training (TVET). The document begins with two keynote speeches and five topic presentations, which are titled as follows: "Current Issues Regarding the Future of Work and the Reform of TVET" (Rupert Maclean); "Tasks for the Realization of a Life-Long Learning Society" (Moo-Kee Bae); "Improving Systems to Provide VET through One's Lifetime" (Helmut Putz); "Information and Communication Technology in Vocational Education and Training" (Morgan V. Lewis); "Assessment and Recognition of Learning and Training--Approaches in the European Union" (Anders Nilsson); "Financing Mechanisms for VET" (Gregory Wurzburg); and "TVET Institution-Industry Partnership: The Colombo Plan Region" (Shyamal Majumdar). Presented next are nine country-specific case studies, including three devoted to lifelong learning in Korea. The case studies are titled as follows: "Germany" (Gisela Dybowski); "France" (Hugues Bertrand); "Australia" (Tom Karmel, John Stanwick); "United Kingdom" (Brendan Barker); "China" (Zuguang Yu); "Japan" Shigemi Yahata); "Korea" (Sung-Joon Paik); "Korea: Current Operational Status and Future Direction of CE (Customized Education) in Vocational Colleges" (Sung-Tae Hong); and "Korea: A Case Study on the Business Learning System for Bringing Up a Specialist in Korea" (Gu-Hun Yang). Some papers contain substantial bibliographies. (MN)

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"VET through one's lifetime: New approaches and implementation"

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CONTENS

Keynote Speech

1 Dr. Rupert Maclean (Director, UNESCO-UNEVOC Center) 3

2 Dr. Moo-Ki Bai (President, Ulsan Univ.) 5

Session 1 : Topic Presentations

Topic 1 Improving systems to provide VET through one's lifetime

Dr. Helmut Pütz (President, BIBB) 19

Topic 2 Using ICT in VET

Dr. Morgan V. Lewis (Professor, NDCCTE, Ohio Univ.) 33

Topic 3 Assessment and recognition system of learning and training outcomes

Mr. Anders Nilsson (Specialist, CEDEFOP) 53

Topic 4 Financing mechanisms for VET

Mr. Gregory Wurzburg (Specialist, OECD) 69

Topic: Involvement of stakeholders in VET

BEST COPY AVAILABLE

5 Dr. Shyamal Majumdar (Specialist, CPSC) 123

Session 2 : Country Reports

Case 1 **Germany**
Dr. Gisela Dybowski (Director of International Cooperation, BIBB) 137

Case 2 **France**
Dr. Hugues Bertrand (Director, CEREQ) 149

Case 3 **Australia**
Dr. Tom Karmel (Director, NCVER) 169

Case 4 **United Kingdom**
Dr. Brenden Barker (Duty-director, British Council) 207

Case 5 **China**
Dr. Zuguang Yu (Vice-director, CIVTE) 217

Case 6 **Japan**
Dr. Shigemi Yahata (Director of Research Division, JIL) 237

BEST COPY AVAILABLE

Case 7 Korea

1 **VET through one's lifetime: New approaches and implementation – Korean case**
Dr. Sung-Joon Paik (Fellow, KRIVET) 255

2 **Current operational status and future direction of CE in vocational colleges**
Dr. Sung-Tae Hong (Professor, Yeungjin Junior College) 283

3 **A Case Study on the Business Learning System for Bringing Up a Specialist in Korea**
Dr. Gi-Hun Yang (Hyundai Research Institute) 329

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Keynote speeches

Current Issues Regarding the Future of Work
And the Reform of TVET

Rupert Maclean
Director of the UNESCO International Centre for Technical and Vocational Education and Training (UNESCO-UNEVOC)
Bonn, Germany

—— ABSTRACT ——

Education sector reform used to be a phenomenon that took place once every decade during the Industrial Age. In contrast, the new Information Age is transforming the world of work at a pace that suggests educational system and TVET reform should take place at more frequent intervals, if not on an on-going, continuous basis.

Mumford's *neo-technic revolution* forecast the creation of new technology by institutional research and development over 30 years ago. Today, his futuristic forecast is a reality. Daily announcements of technological developments give us an indication of the future of work; for example, the emerging field of *molecular electronics* appears to be incorporating fabrication concepts from the new field of *rapid manufacturing* to build nano-scale computer chips and circuits. The recently-announced development of *nano-imprint lithography* to fabricate elaborate computer chips suggests even greater workplace change in the near-term future. The impact of such research and development upon TVET – both in-school and at the workplace – is likely to be phenomenal.

Delors told us that "the concept of learning throughout life … emerges as one of the keys to the twenty-first century." These Information Age developments suggest that the workplace of the future will also be characterised by continuous, life-long learning at a pace that is likely to be driven by the rapid pace of technological change.

This address will explore these issues and related issues that currently affect – and will affect in the future – the future of work. In turn, the impact of these issues upon the world of work will be reflected in those TVET reform initiatives that will become necessary to keep pace with such institutionalised change.

Tasks for the Realization of a Life-Long Learning Society

Dr. Moo-kee Bae
Chancellor of Ulsan University, Head Advisor of the Education and Human Resources Policy Commission, Presidential Advisory Body

Developments and Impact of a Knowledge-based Economy

Discussions of knowledge and skills as one of the production factors constituting a production function, in theory, began in earnest between the end of 1950s and the early 1960s with the introduction of the Human Capital Theory. As part of the US government's efforts to support the deprived classes represented by the black population, support policy on human resources investment, in other words, in the form of education and training, began to be pursued with vigour. In mid-60's, two of the representative programs in that vein were 'The Great Society' and 'War on Poverty' pursued by the Democratic administration. In Japan, the Koikei Group emerged during the 70's and 80's which placed emphasis on the Japanese skills acquirement system that allowed the build-up of 'Intellectual Skills' of workers in a systematic manner, their ideas and assertions were translated into various languages and propagated to countries in Europe and the US.

Studies or policies that acknowledge knowledge and skills as important production factors and which focus their direction toward the specific build-up processes or the outcomes of such processes are not a recent phenomenon. However, in a knowledge-based economy, which epitomizes the current economy, the importance of knowledge and skills has gone beyond this point. Knowledge and skills have become the production factors of crucial importance that determine the competitiveness of workers, enterprises and nations. According to a US study, businesses which possessed workforce with the level of education 10% higher than average (This translates into one more year of education.) showed 8.6% higher production rate than the average. On the other hand, enterprises with 10% more capital investment than the average showed a mere profit which was 3.4% higher than average gained through capital investment alone, all these figures illustrate the value of knowledge and skills.

As defined by the US Department of Labor, a knowledge-based economy is one 'powered by technology', on the one hand, and 'fueled by information and driven by knowledge', on the other.

Many researchers frequently point out the application of the Theory of Increasing Returns or increasing fluctuation, in short, increasing unpredictability and the dissolution of the concept of distance with enhanced globalisation as some of the major features of a knowledge-based economy. But such characteristics that distinguish a knowledge-based economy are, from another perspective, factors that enhance competition among economic players. The fact that the Theory of Increasing Returns forces one player to be the first to seize the opportunity in order to survive, the fact that consistent efforts are needed due to fluctuating situations or increased unpredictability, and the fact that the arena for competition is undergoing 'globalisation' due to the dissolution of the concept of distance are the very factors that stimulate more competition. Under such conditions, a knowledge-based economy can be defined as an economy that forces continuing improvement and innovation on the basis of knowledge and skills.

The emergence of a knowledge-based economy with such features is being assessed as having immense impact on society and economy. Some see the emergence of a knowledge-based economy from the Schumperian Long-Wave Theory as the Fifth Wave. Others will go as far as to say that we are seeing a transition into another paradigm. The world economy, according to this theory, has entered its 'Fifth Wave' under the Schumperian Long Wave Hypothesis with 1990 as the base year. This is the new technological and economic paradigm that will replace the industrial and capital era that marks the previous two centuries.

What would be the impact of the emergence of such a knowledge-based economy on the labor market and the repercussions that would affect all areas of the economy and society? For one, we can point out the increasing demand for knowledge-based workers. Since knowledge and skills are two most important production factors in a knowledge-based economy, such a change may only be too natural. In the US which has been seen as having made the most progress towards a knowledge-based economy, by 2006, half of the workforce is expected to be employed by enterprises that produce or have intensive use of information technology, goods or services related to information that is available.

The fact that a knowledge-based economy increases the unpredictability of the future, naturally, raises the unpredictability of the quantity and quality of the labor demand, and this makes the overall development of the labor market more vulnerable and difficult to predict. In the case of the US, the fact that 1/3 of the labor is 'transferring' annually clearly illustrates the dynamics of the labor market and the enhanced unpredictability which are two characteristics of a labor market based on a knowledge-based economy. Pure employment between 1995 and 1996 increased 1.87 million in the US, while the new employment increased by 16.20 million, 14.24 million jobs were lost.

Meanwhile, the softening of the labor market is expected to continue and non-traditional forms of employment are expected to increase. In response to new technologies, the need for workforce equipped with new knowledge or skills is expected to grow; the level of competition that was restricted to that between nations will take place on a global scale with the increase in globalisation. Additionally, enterprises will increasingly prefer employment drawn from spot markets where the workforce with the necessary skills can be acquired on a temporary basis rather than an existing stable full-time workforce. In other words, when the goods market turns into a just-in-time market, the labor market may see a likewise transformation into a just-in-time labor market. Experts on US labor market expect not only contingent workers, on-call workers, independent contractors and temporary help or leasing agency workers, but also nontraditional workers to constitute a major part of the future workforce.

The problem of an increasing gap in accessing the labor market due to 'digital divide' can also be cited. The applicability of ICT that forms the technical foundation of the knowledge-based economy, will become one of the most important factors in determining access to ICT-related employment as well as non-ICT related employment. In ICT application, the huge gaps in education, income, race, regional differences remain a reality. The new concept that has emerged which takes into account such a reality is the concept of the 'Digital Divide'. The 'Digital Divide' is defined as, "inequity in access to computers and the Internet among individuals and various groups in a region of a country." In the case of the US, high-income households have a 20 times greater access to the Internet than the lowest income households, and the access to the Internet in the black and Hispanic households was only 2/5 of that of white households. Notably, Internet access in the rural households was far lower than that of the urban households. Unless this digital divide is addressed, the divergence in the level of skill competency will increase, which will hamper access to employment and increase the income gap.

The Significance of Establishing a Life-long Learning System

In addressing such changes in the economic and social paradigm, the OECD(1996) proclaimed 'lifelong learning for all' as one of its prerogatives in the belief that, "As we enter the 21st century, lifelong learning is essential, and everyone should have access to lifelong learning." 'Lifelong learning', here, refers not to adult education as in the case of rewarding those who have missed out on their chances for regular education with opportunities for education, but to a proactive concept of lifelong learning that acknowledges the ability to learn throughout one's lifetime and to provide the motivation to learning as well as to encourage those to become more active in learning.

The significance of lifelong learning can be witnessed from various angles. First of all, the emergence of a knowledge-based economy calls for increasing need to acquire new skills. In the meantime, since the labor demand is consistently changing, the result is that with 12-16 years of regular education along with the a working life that spans around 40 years, cannot be maintained with stability, unless some training or learning continues. With technological changes and increasing competition, the quantity of knowledge.and information is on the surge, and the cycle of production and dissolution is becoming shorter and shorter than ever. In order to respond to such changes, continued efforts to develop and improve oneself throughout one's lifetime is inevitable. Preparing for employment, is no longer, a once and for all process that concludes with the first education and training program. Education and training should be transferred into a strategy to develop one's capacity for a renewal of knowledge and skills.

As the external environment undergoes increasing changes, enterprises tend to buy decisions rather than make decisions with regard to development of human resources. The ongoing development of new products, enhanced competition and time tends raise the dependence on external labor markets that employ 'the right person with the right skill, at the right time' rather than rely on an internal labor market that is founded on a long-term employment type relationship. This is because enterprises prefer employees with experience and workers themselves no longer hesitate to shift their employment in order to maximize their value. With eroding concept of life-long employment and with increased fluidity in the labor force, enterprises cannot recover their profits by investment in training, hence, they have less motivation to invest in human resources.

Developments in Major Developed Nations

As the significance of human resources development policies comes to the foreground more than ever, major developed nations are actively involved in developing and implementing human resources development policies tailored to the knowledge-based economy. They do this in order to enhance national competitiveness and improve the quality of life.

One of the nations that is most actively involved in preparation and implementation of human resources development geared toward the knowledge-based economy is Great Britain. In preparing the new national human resources development policy in Korea, it is not an exaggeration to say that we have been referring to the Vision and Measures adopted by Great Britain in its national human resources development policy as benchmark documents.

The British Government has set as its vision, 'high skills, high rewards, and the formation of a society with open access to all', and has been involved in developing and implementing a variety of policy measures to achieve its vision. One of the key policy measures include the following: The establishment of a 'Learning and Skill Council'(LSC), the establishment of a 'Learning Partnership' and formation of 'IT Learning Centres', the implementation of 'The New Deal', 'Work-based Learning for Adults', 'National Skills Task Force', 'Skill Development Fund', 'Investors in People(IIP)' and 'Individual Learning Accounts', and so on. A look at the contents of some of the key policy measures include emphasis on partnerships, lifelong learning and improvements in competency levels.

In the US, the emphasis is similar. One of the points stressed by the 21st Century Human Resources Commission is the establishment of partnerships and a lifelong learning system. The Commission has identified 'the formation of knowledgable and skilled workforce through partnerships and a lifelong learning system' as the most important element in the 21st knowledge-based economy.

As is the case in Great Britain, a single government body is responsible for human resources development policies in Australia. The Department of Education, Training and

Youth Affairs (DETYA) which is an integrated government administration is responsible for human resources development of both those who will enter (those still at school) the future labor market and those who have already entered the labor market. Therefore, the vision and detailed policy measures for human resources development policies in Australia, are geared towards education and training of youths. Australia also stresses the importance of partnerships, stating "The prosperity of Australia in this new world will demand cooperative efforts on the part of the government, the private sector and the regional communities.", which is similar to the US and Great Britain's directions. The formation of partnerships between economic players is a precondition, and in association with this goal, the Australian Government is working to come up with plans to satisfy the objective, strategies and policy measures in preparation for an Information Society. The Australian Government is also focusing on the realization of 'Flexible Learning'. It is understood that this constitutes the key element in the national human resources development policies in anticipation for a system that will allow for the development of just-in-time, just-for-me skills through flexible learning.

In recent years, it needs to be emphasized that policy efforts for lifelong learning has been directed toward acknowledging, on a broader basis, the experiential learning gained through non-official, non-tangible avenues. At the Education Ministerial Meeting of the OECD held in April, 2001, member nations have announced in a joint communique the need for lifelong competency development and cross recognition of experiential learning. In addition, at the 88th conference in 2000, the ILO has adopted as one of its tasks, the recognition of experiential learning through the adoption of a National Qualification Framework to promote lifelong learning. In the US and Canada, university without walls, external degrees have been set up that recognize prior learning; in Great Britain, Australia, and New Zealand, qualifications are gained following assessment and recognition of prior learning under a national qualification scheme, and the exchange between qualifications and degrees has been established. Assessment and recognition of experiential learning means a fair system of assessment of skills gained regardless of place and method of learning, job experience, OJT experience, unofficial and non-tangible forms of learning. Assessment and recognition in credits or education of experiential learning such as knowledge or skills gained through employment or society, will help expand the opportunities whereby continuing to learn at higher education institutes, secure articulation and continuity in learning and to help to stimulate better competency development in work places and society, in general.

Reality and Tasks

With the achievement of a lifelong society emerging as one of the key policy tasks of developed nations, the Korean Government has been dedicating itself to adapt itself to this new global trend.

The ministerial-level, Ministry of Education has been renamed to the deputy prime ministerial-level, Ministry of Education and Human Resources Development, and the enactment of the Basic Act on Human Resources Development are such cases in point. As the legal basis for the establishment of lifelong learning system, the Lifelong Education Act was implemented on March 1, 2000 and additionally, the Credit Bank System was introduced in which lifelong learning results from education institutes outside the regular education system are assessed and recognized. Also, the Basic Vocational Training Act was replaced by the Vocational Training Promotion Act which gives more leeway to private sector incentives, and the enactment of the Vocational Education and Training Promotion Act which emphasizes the articulation between vocational education and training, are all part of such efforts toward the new trend in life long education.

However, despite such efforts, it is difficult to deny that there still remain problems that need to be addressed. First of all, there is insufficient articulation between the central government ministries. As mentioned earlier, the enhanced status of the Ministry of Education and Human Resources as well as the establishment of the Human Resources Development Commission, a ministerial body, to discuss human resources development policies that were intended to help integrate and coordinate the responsibilities that have been dispersed throughout the various ministries. But, as was recognized by the ministry, "It is the reality that the 'Don't interfere in my affairs-type' policy making practices and the belief that discussions tend to be interpreted as intrusive, have prevented a more eager presentation of agendas for discussion and participation in discussion."

Experiences in developed countries illustrate that the formation of partnerships is very important. Korea, likewise, is making every effort toward the formation of partnerships and networking including the enactment of the Vocational Education and Training Act. Despite such efforts for human resources development that include the establishment of Vocational Education and Training Consultative Commission by the Government, the implementation of the Vocational Education and Training Promotion Act that would provide regional governments with the legal basis for the establishment of vocational education and training commissions at a regional level, the establishment of partnerships and networking processes among the parties involved is faced with obstacles from the outset. It is not an exaggeration to say that the legal framework is of no use.

Besides, the support for lifelong learning is not sufficient enough. For example, among the 20 trillion won set as the education budget for 2001, the share of lifelong learning projects account for a mere 0.01% or 3.2 million won. Moreover, the Credit Bank System, although it recognizes individual learning experiences, it is limited in that the recognition is conferred to education degrees that are gained through the regular education system. Since the Credit Bank System is founded on 'the recognition of degrees', instead of easing the pursuit of credentialism for the sake of a lifelong learning society. There is criticism that it is being used as a means to ride on the bandwagon of credentialism. Unless, employment experiences and learning are linked together, and various vocational experiences are recognized as learning, it is hard to deny the possibility that the promotion measures for lifelong learning through the recognition of credits and degrees may result in an 'inflation of education'. In addition, the Credit Bank System is limited in its implementation at accredited education and training institutes, making it less than magnanimous in its application for the assessment and recognition of learning experiences.

Meanwhile, in order to promote lifelong learning throughout one's lifetime at work, separate education degrees, apart from those earned through regular education, should be recognized. Also, the establishment of a vocational qualifications system for the assessment and recognition of vocational competency through learning should be set up. Unfortunately, the qualifications system put in place in the mid-70's with the National Technical Vocational System, has not played its role in inducing efficient development of human resources in close connection with the labor market. One of the main reasons for its inefficiency is the lack of social flexibility to satisfy the industries' demand for workforce.

Following the implementation of the Vocational Training Promotion Act, the rapidly growing tendency for workers to participate in lifelong vocational development programs become a welcome phenomenon. However, the problem lies with the limited support offered to development of vocational competency of the individual workers. Some of the support measures for the individual workers such as providing financial incentive for attending vocational courses, loans for tuition, and recognition of vocational training undertaken during paid leave, etc, have not been eagerly embraced. Projects intended for development of vocational competency show that although the objective may be for the development of a lifelong vocational competency of the worker, they do not reflect the changes in the economic paradigm sufficiently. Hence, the support system, rather than offering support to individual workers who should play more active roles in the development of competency, it has been maintained as a subsidy system for the development of vocational competency for the benefit of the employers.

Therefore, in order to address the above problems, there should be a number of readjustments in terms of policy application. First of all, to address the problem of lack of sufficient the interconnection between government ministries, we should consider the integration or adjustment in responsibilities between ministries in the medium to long run. Prior to the proper functioning of the relevant ministry, the legal framework should be provided to enable the Human Resources Development Commission to play a more active role in its original function as coordinator. At present, the Ministry of Education and Human Resources has been identified in the Basic Human Resources Development Act to oversee the assessment of projects related to human resources development, it is expected that if it follows closely the original purpose of the Act, the coordination function of the Ministry may be guaranteed to a certain extent.

In addition, there should be legal and policy supports to enable the establishment of partnerships between the stake-holders in human resources development. Adequate role-sharing between the central government and regional governments will allow the sectional governments to go ahead with human resources development policies that suit their respective regions. Moreover, whether it is initiated by the central government or the regional governments, there is a need to develop a system in which all the parties involved may benefit from the development of human resources by sharing the costs involved among the government, education and training institutes, enterprises, labor unions and workers.

In the meantime, to allow the present Credit Bank System to turn into a more effective means to promote lifelong learning, it should be redirected to strengthen the ties between 'work and learning'. In that regard, the issue of recognizing experience as part of learning, in other words, the recognition of experience as part of learning gained through unofficial and non-tangible avenues remains urgent. The qualification system should be more widely recognized by the society, and on that basis, the education and qualifications can be linked together.

With the aim to counter the trend of lower investment motivation in human resource development on the part of enterprises, it is necessary to strengthen the support system for voluntary vocational competency development by workers which is at the moment fairly restricted. This means that support must be provided to workers who are selecting and undertaking vocational courses. Such support for individual-initiated learning will be able to provide the opportunities for sustained development of individual skills by making up for the investment on human resources development by the private enterprises, in addition to allowing workers to use the extra time through shorter working hours to develop their own individual skills. For that purpose, the current private enterprise-borne vocational development insurance system should be redirected to account for private individual competency development, into one that allows more individual workers' share in costs. In short, this will provide a system where the government, the enterprise and the workers themselves share the costs.

Last but not least, for the effective progress and success of efforts directed toward the development of human resources and the establishment of a lifelong learning system in Korea, in addition to the policy tasks that were mentioned earlier, I would like to reemphasize the importance of Korea Research Institute for Vocational Education and Development (KRIVET), the research institute responsible for the study of policies concerning human resources development.

Session 1 : Topic presentations

Improving systems to provide VET through one's lifetime

Prof. Dr. Helmut Pütz
President
Federal Institute for Vocational Education and Training
Germany, Bonn

Abstract

There are two pivotal developments of the past 20 years that have caused most of the changes affecting the workforce and the need for training. They are:

1. micro-processor technology and its impact on information, communication, production, and work organisation,
2. teams and groups are the new forms of work organization and learning.

Information and communication technology (ICT) is at the root of a process of transformation in the course of which industrialised societies are changing into "knowledge societies' and the management of production into the management of knowledge. There will be less and less manual work while computers become the main tool catering for the information needs of all professions. As a result, letters and figures, into which all procedures have to be translated, become more and more important for all human activities at work and in private life.

Therefore, it must be one of the most important tasks of education to enable people to cope successfully with permanent change and uncertainty through:

1. information and knowledge about the reasons for the changes, including systems' knowledge (e.g. computer systems, banking systems, free-market systems);
2. skills on how to gather and select information and knowledge, and how to use them in planning and decision-making processes;
3. problem-solving and practical skills, social and team skills; and
4. the personal development of the learner through general, vocational and professional education.

The German response of the Vocational Training Sector is: should be:

- more flexibility of VET;
- more interaction between education, training and work;
- more focussing on new ICT;
- new methods of learning;
- more work experience in relation with learning; and
- more training for self-employment; and
- more modularising within a complete vocational basic qualification/competence.

In our world

- computers are becoming a common tool not only for managers, but also for front line workers;
- all information is being digitised and transformed into computer-compatible letters and figures; and
- the internet is established as a world-wide information web, using English as the lingua franca of the knowledge age.

New methods:

- "PROJEKTMETHODE" (Method used in the project)
- "LEITTEXTMETHODE" (Handbook method)
- "JUNIORENFIRMA" (Junior firm)

Overview

There are two pivotal developments of the past 20 years that have caused most of the changes affecting the workforce and the need for training. They are:

1. micro-processor technology and its impact on information, communication, production, and work organisation,
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1. New methods

In addition to specialized content, action-oriented teaching and learning methods must be developed. During the last twenty years, more than 50 companies in our country have tested in several pilot projects, in conjunction with the German Federal Institute for Vocational Training, diverse approaches for developing training methods. These are mainly projects involving in-company training which aim above all to improve the trainees‘ ability to learn and not simply to transfer „retrievable“ knowledge or routine skills. Three examples of successful innovations are set out in Boxes 1 to 3.

Box 1:

"PROJEKTMETHODE" (Method used in the project)

This task-oriented learning approach aims to provide a useable final product. Mastery of various skills, knowledge and additional abilities along the lines of the qualifications are needed to produce the product. This method has proved most suitable particularly in workshop training for encouraging motivation and the transfer of an attitude for learning, methodological skills, and an ability to cooperate. The experience gained in the method of the project could be utilized in small and medium-sized enterprises when attending to everyday work tasks.

Box 2:

"LEITTEXTMETHODE" (Handbook method)

The preparation of handbooks obliges both trainers and trainees to analyze the learning goals and contents, and to plan a learning process adapted to the individual skills of the participants. This means that the functionality of the existing training organization must be critically reexamined with regard to training goals, teaching contents, trainers, trainees and the framework conditions in the enterprise. The handbook method is therefore not merely a special form of instruction; it is also an instrument which can be used to investigate the necessary changes in in-company training.

Box 3:

"JUNIORENFIRMA" (Junior firm)

The junior firm supplements the commercial, in-company vocational training, but goes beyond what a training firm does. It, too, aims to make the trainees in the company as independent as possible during the learning process under real company conditions. The activities of the junior firm differ from those of the training office in that its work processes are not simulated. Its business activities range from the sale of goods and services, e.g. staff purchases to handling in-house orders. Actual tasks in the company are used to familiarize trainees with commercial functions. This method also lends itself well to demonstrating in real terms the changes in the areas of activity of office staff which have been prompted by the appearance of information technologies in the office world.

Teacher and trainer are now expected mainly to support the trainees' own activities, to keep their motivation and their interest in the subject going, and to offer advice in individual instances of difficulties. The trainer becomes the investigator of learning processes and the organiser of learning situations which promote these learning processes.

2. Interaction between education, training and work

Successful transition from training to employment in line with that training for the overwhelming majority of young people completing an apprenticeship is considered to be a central indicator of the efficiency of any training system.

Countries with a dual system of vocational training can justifiably claim to have the lowest youth unemployment rates in Europe. Although a training system cannot create jobs and is also not a substitute for economic or labour market measures, it can help facilitate the transition of young people from training to employment. In Germany, youth unemployment and indeed unemployment as a whole are now issues of major political importance.

In order to prevent the number of unemployed young people from rising or indeed to reduce the youth unemployment figure, Germany is relying first and foremost on the ability of the dual system to integrate even the less able youngsters into the labour market.

Given the problems of crossing the so-called „second threshold", i.e. of the transition from training to employment, Germany has focused on developing concepts which provide for a graduated approach to market access. One example here is part-time work associated with possibilities of in-house or external continuing training and increasing working hours to gradually approach full-time employment. There are also numerous collective agreements which facilitate the retention of newly qualified ex-trainees in regular employment - at least on the basis of a fixed-term contract.

It would be of considerable interest to exchange experience on the measures taken to implement the lead principle of European employment policy, namely to give all unemployed young people the chance of a new start before they have been jobless for six months. Denmark is a particularly interesting case in this respect as it has taken a series of measures geared to this objective, including imposing an obligation on young unemployed people to accept an offer to undergo training.

The problems encountered by young people when proceeding from training to employment are by no means only the result of personal shortcomings. Other explanations, alongside the general shortage of jobs, include structural problems which give rise to mismatches between the training system and the employment system. An example here might be if too many youngsters want to undergo training for only a few very popular occupations. There is a need here for consideration of how vocational counselling can be improved and attention be directed to alternative training opportunities. Although experience has shown that predicting changes in the skill requirements of the employment system is only a very inexact science, there is still a need to determine which instruments and procedures can be used to identify future skill requirements at the earliest possible point in time.

3. New information technologies

Information technology (IT) is at the root of a process of transformation in the course of which industrialised societies are changing into „knowledge societies“ and the management of production into the management of knowledge. There will be less and less manual work while computers become the main tool catering for the information needs of all professions. As a result, letters and figures, into which all procedures have to be translated, become more and more important for all human activities at work and in private life.

Within work organisation, the hierarchical structure of Taylorised work is disappearing. Teams and groups, the members of which play different roles in pursuing a common aim, product or service, are the new forms of work organisation. They communicate by written, telephoned, faxed, computerised or verbal information. There is little room for unskilled labour.

As a result, language, mother tongue and foreign – mainly English - and mathematics become job-important though not job-specific tools for communication in all work processes. This applies to the work of a toolmaker using CNC machines as much as to the horticulturalist's CNC irrigation. Front line workers join the team that is responsible for overall planning and process-control. They are expected to play their own positive role – they are no longer cogs in a wheel.

All new technologies (information, bio, genetic) emphasize research, learning, teaching and services, rather than the production of goods. Thus, employment in industrial production will be reduced, while demand for skills, knowledge and overarching capabilities will continue to gain in importance.

Growing ecological consciousness will become a very important economic factor in the foreseeable future. Eco-knowledge is an important part of it, but eco-thinking is even more important. It has to be part of all education, general and professional. Nor can it be confined to selected professions. It must apply to all of them including lawyers, doctors, economists and technicians. Building a totally recyclable car with minimum gasoline consumption poses technical problems that are not necessarily more difficult to solve than those of building the largest or the fastest car.

All these changes cannot be mastered by curriculum revisions, new syllabuses or educational reforms. What we need are new ways of thinking. Of course, this is also an educational task. It concerns first of all continuing education for the workforce; secondly vocational and professional education; and finally general education. However, the task cannot be accomplished solely within the framework of education. It also involves the economy, the labour market, our social system and other features of society. Nevertheless, at its root, it all comes down to education.

In our new world

- computers are becoming a common tool not only for managers, but also for front line workers;

- all information is being digitised and transformed into computer-compatible letters and figures;
- the internet is established as a world-wide information web, using English as the lingua franca of the knowledge age.

As a consequence, mathematics, mother tongue and English are becoming more important for vocational and professional education than many of the practical skills that have traditionally been related to specialised training and vocational education. Specialised knowledge and skills are being transferred to continuing education and training, while initial vocational and professional education pursue in their turn the kind of educational objectives that have traditionally been the prerogative of general education.

4. Training for self-employment

The term "employability" has become a catchword in the international discussion in connection with concepts to combat unemployment and the associated fears. However, the term has so far remained wide open to interpretation. Is it just a means of distracting attention from the demand for more and better jobs or does it really represent a concept for bringing about something approaching full employment?

"Employability" refers as much to the ability to be regionally mobile as to the flexibility to cope with variable worktime. A glance at the Dutch „model“ shows, for example, that employability stands for a whole package of measures to expand employment; these include more part-time jobs and also reducing unemployment by opening up new fields of activity for the unskilled and the semi-skilled. There is no dispute, however, that employability depends decisively on making full use of "human resources" and continuously developing skills and competences.

Employability refers to the ability of the individual to develop his or her skills and competences in order to cope successfully with critical periods of transition in working life.

This ability is all the more important, the stronger the fundamental change in the direction of "patchwork" jobs makes itself felt.

Much would suggest that individuals will be increasingly expected to be the developers and designers of their own skills. And it is no longer just a matter of navigating the transitions at the first and second thresholds: also to be managed are times of reintegration into the labour market after a period of unemployment or indeed horizontal and vertical mobility in one's present job. New job contents and skill requirements will mean ever more frequent switches between learning and working throughout working life, and even periods of self-employment, dependent employment and voluntary work are likewise increasingly becoming features of individuals' occupational trajectories.

There are indications that such „patchwork" occupational biographies will become more common as the service society becomes a full reality. As the service sector takes on ever greater dimensions, there are signs of a fundamental change in working life and dependent employment. Heralded by manpower-shedding lean organizational structures, outsourcing practices, tele-workplaces and a growing number of persons in (voluntary or enforced) self-employment, new relations are emerging between core workforces and fringe workforces. It is probably only a minority of the workforce who will in future hold a traditional, permanent job within a stable organizational arrangement. The characteristic features of the „regular" job of the future will most likely be a fixed-term duration and a dependency on the existence of a specific project; in many instances the boundaries between the „employee" and the „employer" in the classical sense will become blurred; an indication of this is the expansion of bogus self-employment.

One of the features of classical occupations is that they are based on a relatively easily definable set of requirements which are mirrored by corresponding skills held by the individual qualified for the occupation concerned. In the case of the new occupational fields and employment areas, the relationship between requirements on the one hand and skills on the other is largely open for continuous adaptation; the quest for proper coordination between requirements and skills will shape the profile of the „occupations of the future". Openness and pressure to change are their characteristics. Holding skills in reserve will become less possible, and lifelong learning will predominate. Employability is therefore an unending challenge for all concerned.

5. Work experience

Increasing interest is being shown in the company as a place of learning and in forms of training which are integrated into the work environment. Learning processes which take place exclusively outside the work environment are no longer able to meet today's increasingly demanding skill requirements.

The players involved in initial and continuing training and in the tertiary sector are showing a shared interest in exploring the merits of the company as a place of learning and of learning in a work environment with an inherent „learning value". The debate on possible reforms has already produced corresponding calls for a „duality of learning", a dual system of continuing training and dual-venue higher technical education courses analogous to the two-venue structure of the dual system of initial vocational training.

This trend has much to do with the fact that the changes taking place in working life have produced a quantitative and qualitative demand for skills which cannot be acquired exclusively through learning processes which take place in isolation from work, i.e. in courses, seminars, etc. It is particularly the key skills, e.g. the ability to cooperate and communicate, creativity, abstract reasoning, which are no longer requirements for traditional academic jobs only; these skills are the trend-setters in virtually all jobs and although they can be refined through formal learning processes, they are generated and developed by learning during work.

In the corporate continuing training sector, various forms of learning during the work process have already become established practice: the classical forms such as courses and seminars are increasingly being displaced by forms which are close to or integrated into the work process; in some cases all forms of pedagogic intervention are dispensed with altogether and the venture relies first and foremost on informal learning, learning by working.

Approximately three fifths of all companies (with a workforce of over 10) are today drawing on work-related forms of continuing training, these being understood mainly as instruction by a superior, induction training, exchange schemes, job rotation schemes, learning workshops and quality circles. The predominant form is still the classical concept of coaching, but large companies are already using the more modern continuing training concepts, e.g. job rotation and quality circles. Almost three quarters of all companies ran some form of continuing training in the form of courses, and continuing training at the workplace was offered by two thirds of European companies. This trend shows that in order to develop and maintain their employability, employees are increasingly needing forms of training which are related to or integrated into the work process and are furthermore backed up by work structures and workplaces which are conducive to learning.

Informal or „self-directed“ learning at work has won an increasing significance in the discussion on vocational education and training. Politicians and researchers, trainers and experts in personnel development stress the importance of individual work experience and learning in the work site beside the well organized and monitored training and education courses in enterprises, vocational schools, and training centers. Both, the enterprises as well as the individuals are forced to adapt quickly to new challenges and tasks. Continuous learning is necessary to survive in the global competition and to assure the personal employability. That is an international consensus.

Informal learning on the job, self directed learning in different work situations and by using modern multimedia-systems (distance learning supplies) is proposed, sometimes as the best form to acquire the needed skills and knowledge just in time. Under these conditions the new competencies are learned in the concrete work situation; there is no need for transferring; the skills and knowledge can immediately be applied. But on the other side: the competencies are very job specific, often narrow and not transferable. Neither formally organized vocational education and training alone nor informal learning at work alone can assure the development of those competencies which enable companies and individuals to cope with the changeable conditions of work reality and societal life. Innovative and flexible combinations of both learning venues must be designed, tested and established. That is an ambitious new task for researchers and practitioners in VET.

With the increasing relevance of informal learning at work (work experience) as a source for lifelong competence development the question arises, how it can be tested and recognized. Everybody builds up an individual know-how through informal learning which forms his/her individual expertise. Therefore, individuals must be highly interested – for labour market reasons as well as for planning the education career – to get a certificate. And also the enterprises should know better the qualification potential of their workforce for better assignment and personnel development.

Formal education and training is characterized by an elaborated examination procedure and an agreed certification concept. But what happens concerning the results of informal learning? Here a strong question mark is to be set. In some European countries, e.g. France („bilan de compétence), UK („Accreditation of Prior Learning") or the Netherlands (the Dutch concept is under testing) instruments are developed for assessing and recognizing work experience and not-only formal learning outcomes, Also in Australia and New Zealand assessment and certification strategies for non-formal learning are established. In Germany we have for a long time discussed a „vocational education passport" to document informal competence development at work, but it is not yet established.

There are many methodological problems to assess informal competence acquisition in the worksite. In some countries a huge „testing machinery" is started, This policy roots in the conviction that a good methodological quality (operationalized as objectivity, validity and reliability of tests) supports the value of the certificates. But there is some empirical evidence that this approach must be scrutinized. To become a recognized „currency" the assessment/certificate must be socially legitimated, must have social credibility.

Information and Communication Technology in Vocational Education and Training

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Abstract

There is no question that Information and Communication Technology (ICT) is affecting all aspects of society, and may have its strongest influence on education. This paper examines the likely impact on education, in general, and the implications for Vocational Education and Training (VET). Some expect ICT to totally transform the teaching-learning process while others foresee much more modest change. Schank (1999) sees a future where the world's best experts will develop multimedia courses for their disciplines that will be far superior to traditional teaching. This superiority will cause schools and college to replace their present offerings with electronic alternatives. Cuban (2001) is skeptical of such predictions. His observations have found that if ICT is used at all, it is integrated with existing methods of teaching. Thomas's (forthcoming) study of selected secondary schools yielded findings consistent with Cuban. Whether Schank's or Cuban's projections prove more accurate, the adoption of ICT is likely to follow the pattern identified for other innovations in education.

Initiatives from four diverse countries to support the use of ICT in education are described. The countries are Australia, Jordan, Malaysia, and Singapore. While these countries are quite different, the process they have followed to encourage increased usage of ICT are similar. Essential to this process are leadership, planning, and training.

The key question with regard to ICT and VET is can electronic media contribute to the learning of the psychomotor, "hands on" skills that are essential to many occupations? Examples are cited of providers that offer online courses in several traditional VET occupations. Evaluations that compare distance education and in-class courses typically find no significant difference in test performance or student satisfaction (Russell 1999). Most of these comparisons, however, are for academic courses in higher (tertiary) education.

The major implications of ICT for VET are the same as for all of education. The first is that students must be prepared to be life-long learners. This means young people must have a sound general education that equips them to seek and use information effectively. The second major implication is that the role of the teacher must change. Students who have access to all types of information do not need or want a teacher to stand before them and present information that they can obtain using their personal computers. Teachers must become guides, coaches, and facilitators of learning that is responsive to the needs of individual students

Introduction

There is worldwide consensus that information technology is producing changes in virtually all aspects of our lives–how we communicate, organize our businesses, operate our governments, entertain ourselves, and educate our children. All indicators suggest that its effects will be even more pervasive in the future, especially in education. There are already so many articles, papers and books on the probable impact of information and communication technology (ICT) on education that it is impossible to review them all. Ironically, ICT greatly facilitates locating and assembling all these sources, but it yields so many that everything that is found cannot be reviewed. There is still a finite amount of time that any one person can devote to reading and integration.

In the preparation of the present paper, I had to establish some limits on what I would attempt to review. I conducted a search of the Educational Resources Information Clearinghouse (ERIC) database from this website <http://ericae.net/aesearch.htm> using the keywords *information technology and vocational education*. I conducted a second search of *Educational Abstracts* from the web link provided by The Ohio State University Library using only *information technology*.

These searches yielded over 2,200 titles. It would have been very time consuming to read just the abstracts of all of them. The titles from the ERIC search primarily reflected two different emphases: (1) the role of vocational education and training (VET) in preparing skilled workers for ICT, and (2) the likely impact of ICT on teaching and learning. I decided that the second emphasis was more aligned with the second sub-theme of this conference and limited my review to sources that address efforts to support use of ICT and the likely long-term impact this technology will have on education.

This paper thus focuses on the implications of ICT for teaching and learning. There are some who claim that ICT will totally transform traditional education, and others who think the impact will be much more modest. I present both of these positions and the evidence relevant to the adoption of ICT and innovations, in general, in education. I then provide brief descriptions of national efforts to encourage use of ICT in education in four diverse countries. In the next section I turn specifically to applications of ICT in VET. Much of this discussion draws upon literature that has examined online distance education. In the final section I present my assessment of how ICT is likely to change the role of the teacher.

Will Information-Communication Technology Transform Education?

No one questions that ICT will have an impact upon education. There are differences of opinions, however, on the degree to which this impact will change the nature of the teaching-learning interaction. On one side of this debate there are those who claim that electronic access to the best teachers and content will fundamentally change the role of the average teacher. On the other side, there are those who think teaching will remain much the same. Let me give you examples of both these positions.

For several years, Roger Schank directed the Institute for Learning Sciences at Northwestern University; he is currently Distinguished Career Professor at Carnegie-Mellon University. From his perspective as a leading researcher in the development of virtual learning environments, here is how he foresees the role of teachers changing:

> The availability of courses delivered over the web will lead to a shift in teachers' responsibilities from teaching academic subjects to teaching social and interpersonal skills. All academic subjects will be taught online and, as a result, teachers will no longer be expected to be experts in these subjects. Instead, the role of teachers will evolve into one that combines the skills of a social worker, guidance counselor, and camp counselor. Teachers will move away from a role of authority figure to one of a learning facilitator or guide as well as providing one-on-one mentoring (Schank and Jona 1999, p. 14).

Larry Cuban comes to the study of ICT from a much different perspective, that of an historian of education. Here is what he concludes based on a study of schools in Silicon Valley, California, an area where one would expect high levels of electronic learning:

> The introduction of information technologies into schools over the past two decades has achieved neither the transformation of teaching and learning nor the productivity gains that a reform coalition of corporate executives, public officials, parents, academics, and educators have sought. For such fundamental changes in teaching and learning to occur there would have to have been widespread and deep reform in schools' organizational, political, social, and technological contexts. From my inquiry into Silicon Valley schools I have concluded that computers in classrooms have been oversold by promoters and policymakers and underused by teachers and students (Cuban 2001, p. 195).

Which of these two views is more likely to prevail? Schank's position emphasizes the advantages of having the world's experts developing the best instructional materials possible. He projects that the delivery of courses over the World Wide Web will inevitably replace courses developed and delivered by individual teachers. The superiority of the experts' courses will, in Schank's view, cause all levels of education to adopt them. In his words:

> Once the very best physicists in the world sit down and create a physics course, there will be little use for local physics teachers. This will soon happen as investors seeing the rise in internet stocks begin to enter the education market. The same will be true for every academic subject and for many subjects that are not now seen as academically relevant. ((Schank and Jona 1999, p.15).

The quoted passage was written in 1999, prior to the collapse of the technology bubble in the stock market. In the present economic climate, the potential of Internet-based companies is viewed much more skeptically, and there is little of the sophisticated course development that Schank anticipated three years earlier. A survey of state technology coordinators conducted in 2002 by *Education Week* found many online courses are traditional curriculum transferred to the Web (Manzo, 2002). In fairness to the course developers, it should be noted that they often must limit what they include in their content to the transmission and processing capacities of most users. The typical home user, as well as many schools, has a dial-up modem with a maximum speed of 28k or 56k and a first or second-generation Pentium processor. This combination results in slow downloading of detailed graphics and video.

> Cuban's position stresses the effect of the culture of the classroom. Here is how he summarizes one of the unexpected outcomes of his observations: "The overwhelming majority of teachers employed the technology to sustain existing patterns of teaching rather than to innovate." (Cuban 2001, p. 134). This is far from the fundamental change in the teacher-student relationship anticipated by Schank.

The usage of computers that Cuban found is consistent with that of other new technologies during the 20th century including, radio, film, television, and centralized, mainframe computers. None of these produced the revolution in instructional practice that their advocates predicted. As with all educational innovations, the use of ICT in instruction has been found to follow a sequence of adoption. Table 1 summarizes the stages in the usage of computers, the Internet, and ICT, overall, that are described in three different sources.

Table 1. Stages of Adoption/Usage of Computers, the Internet, and ICT

Stages	Sendov (1986), Use of Computers	Brimblecombe (2000), Use of Internet	Mooij and Smeets (2001), Use of ICT
Basic	As a new tool/facility, word processor, spreadsheets, etc.	Enhanced communication, e-mail	Incidental and isolated use by 1 or more teachers
			Increasing school awareness
Intermediate	As a valuable educational resource	Use of browsers, home pages, chat groups	Emphasis on coordination and hardware
Advanced	As an integral component that influences both content and method of instruction	Virtual reality, hyperreality, artificial intelligence	Emphasis on didactic innovation and support
			ICT-integrated teaching and learning, independent of time and space

I do not mean to imply by presenting these three models in a table with parallel rows and columns that I consider the stages that they describe as equivalent. Sendov developed what he refers to as "waves" in 1986, before the Internet and the World Wide Web greatly expanded the potential of the personal computer. Brimblecombe's (2000) categories are limited to one component of ICT, albeit a very large component, use of the Internet. As Brimblecombe views the polytechnics and institutes of technology in New Zealand, the third stage is just beginning. Mooij and Smeets' (2001) stages are based on observations of ICT, broadly defined, in 10 secondary schools in the Netherlands. They report that they did not actually observe the fifth stage in the schools they visited, but they project it will evolve as school personnel become more skilled in the use of ICT. Mooij and Smeets provide a table listing the intervention conditions at each of the five stages and actions that could be taken by school management to encourage more and better use of ICT.

Each of these progressions could be described as a transition from learning to use computers to using computers to learn, or as stated by Malaysian Ministry of Education "learning about IT" to "learning with IT." (Mustapha 2000

The sequential implementation identified in these three sources is similar to the more general "stages of concern" initially described by Hall in 1974 and more fully developed by Hall and

Hord in 1987. A considerable body of research has found the following stages for many innovations in education:

Awareness–	Little personal concern or involvement is shown
Informational–	General awareness and interest in learning more detail
Personal–	Uncertainty about the demands of the innovation and one's adequacy and role in its implementation
Management–	Focus on processes and tasks, the best use of information and resources
Consequences –	Attention to the impact of the innovation on students
Collaboration–	Coordination and cooperation with others
Refocusing–	Exploration of wider benefits from the innovation

The studies reported by Hall and Hord (1987) examined different types of innovations, such as team teaching and competency-based instruction. For most innovations, there are a few early adopters. These are teachers who are continually searching for better ways to reach their students. If the experience of these teachers with an innovation is positive, and if school leadership, especially the principal, supports the innovation, more teachers become interested and seek additional information. As teachers become more informed, their concerns shift to how an innovation will affect them personally and how well they can meet the demands the innovation will place upon them. The teachers who move beyond the personal stage, which some never do, shift their emphasis to the effective use of an innovation. Those teachers who become fully comfortable with an innovation then begin to focus on how it affects student performance and how they can work more effectively with their colleagues. Teachers who reach the final stage become involved in rethinking the innovation and ways in which it might be changed to enhance its effectiveness.

Initiatives in Four Countries to Support ICT in Education

The structural constraints stressed by Cuban imply that ICT will change education in an evolutionary, not revolutionary, fashion. At whatever rate ICT usage progresses, however, its impact will be profound. I return to what I foresee as the implications of ICT for VET later in the paper. At this point I would like to present some specific examples of actions that four diverse nation have taken to stimulate the adoption of ICT in education. I list and then describe the actions of these nations in a more detail:

- Australia: Adoption of a five-year strategic plan for flexible learning in VET (Australia National Training Authority 2000a, 2000b)
- Jordan: Establishment of a Directorate of Educational Computing to facilitate introduction of computers into schools (Tawalbeh 2001).
- Malaysia: Creation of a Multimedia Super Corridor to encourage development and usage of ICT that will be supported by Smart Schools (Mustapha 2000).
- Singapore: Implementation of a master plan for ICT that provides a blueprint for integrating technology into teaching and learning and also aims to create "smart" schools (Pan 2000).

Australia

The documents from Australia present a national plan to expand ICT in VET. An advisory group that had representation from states, territories, and statutory bodies developed this plan. The first document sets forth a mission and vision, seven guiding principles, five goals that when achieved will make the vision a reality, and measures of success for monitoring progress toward the goals.

The mission statement is as follows:

To help our industries and citizens make a rapid and successful transition to the Information Economy by adding value to Australia's VET system of flexible learning

The vision is:

By 2004, Australia will be recognized as the global leader in applying new technologies to vocational education and training products and services.

These are the five goals:

1. Creative, capable people
2. Supportive technological infrastructure
3. World-class online content development, applications and services

4. Enabling policies
5. Problem-solving regulation

Seven principles guide all national collaborative activities:

1. Shared benefit to all States and Territories
2. Strategic use on new learning technologies
3. Accelerated take-up of flexible learning methodologies
4. Strategic partnerships
5. Leveraged investments
6. Employee involvement
7. Demand driven

The second document from Australia presents specific actions to be taken in the year 2000, the funds budgeted for each, and the cooperating partners responsible for implementation.. The full document is available on the Internet at this URL: www.anta.gov.au/images/publications/flexible-learning-strategy-2000.pdf. The Australia documents could be of use to officials responsible for VET in other countries who are seeking good models of strategic plans for using ICT.

If I may, I would like to interject a personal aside on the direct impact of ICT on how I obtained the information on Australia that I just summarized. I found the first document about Australia during my ERIC search. I downloaded the document from the ERIC Document Reproduction Service website, but found it to be difficult to read. I could read that the Australian National Training Authority had published it. I went to Google®, found the URL for the Australian Authority (http://www.anta.gov.au), and went to that address. I was not able to find the original document, but I did find a more recent one that update the one I first found. All of this in less than 15 minutes.

Jordan

Tawalbeh (2001) provides a brief history of the introduction of ICT, primarily computers, into the education system of the Hashimite Kingdom of Jordan. As a small, developing country, Jordan has financial constraints that have limited its ability to equip its schools with computers.

In the 1980s, computers were introduced into a small number of secondary schools and gradually expanded. Experiences in these schools were used to develop policies and procedures that led in 1988 to the establishment of the Directorate of Educational Computing as an independent part of the General Directorate of Curricula and Educational Technology.

Since its establishment, the Directorate of Educational Computing has expanded instruction in ICT by equipping all secondary schools with computer rooms and making a course in computer applications and usage compulsory for all students in the 10th grade. Some instructional software has been developed in Arabic, but at the time Tawalbeh was writing, these programs were limited to use as extracurricular activities by interested teachers. The Directorate provides technical support and maintenance, including installation of proper wiring where needed.

Cost of hardware and the need to prepare teachers are the main barriers to expanded usage of ICT. Before making its ICT course compulsory, the Directorate sent selected teachers to the United Kingdom for training. These teachers then conducted in-service training for other teachers. Progress has been slow, but usage of computers continues to expand.

Malaysia

The description of the efforts to expand ICT in Malaysian education provided by Mustapha (2000) has many parallels to the situation in Jordan. Infrastructure–wiring and the availability of computers–and the need for teacher training are the main barriers being encountered. In 1996, the national government committed itself to establishing a Multimedia Super Corridor with the goal of making Malaysia a regional and international technology and telecommunication hub. The corridor is a 15 by 50 kilometer area between the Petronas Twin Towers and the International Airport at Sepang that is designed to provide an environment that will attract companies to develop, distribute, and employ ICT.

To support the Super Corridor, the Ministry of Education has developed the concept of Smart Schools. The vision of Smart Schools is one where "learning will be self-directed, individually paced, contextualized [by dealing with real problems], and reflective using ICT as a prime enabler" (Mustapha, 2000, p. 5). The reality as described by Mustapha was far from the vision. The study of ICT was still an elective at the secondary level. Pubic polytechnics offered two-year certificate and three-year diploma programs to train technicians to use ICT. Private postsecondary institutions began offering such training much earlier than the polytechnics, and there are many more private than public providers. A strong national commitment to provide schools with computers and ICT facilities will be needed to realize the Smart School vision.

Singapore

Singapore provides an example of a nation geographically adjacent to Malaysia, but much further advanced in its use of ICT. In fact, Pan (2000) cites a survey by the International Association for the Evaluation of Education Achievement that found Singapore ranked first of all nations in its use of ICT in education. This ranking is the result of an aggressive national ICT plan that has provided all schools with computers and network capacity. The goal of this plan was to establish by 2002 a student-computer ratio of 2:1 and to have 30 percent of all curriculum time involve ICT. It is impossible to make a causal link, but the high rank of Singapore students in international comparisons of test performance in science and mathematics suggest that this investment has had a significant impact.

Pan (2000) lists the following factors as critical to the success Singapore has achieved:

- Goal definition
- Leadership and management
- Ownership of the effort by all those involved
- Provision of infrastructure
- Training
- Incentives, and
- Monitoring and evaluation

Clearly, conditions are quite different in Australia and Singapore than they are in Jordan and Malaysia. Nevertheless, the need for leadership, planning, and training to support the use of ICT in education are common to each country. The International Society for Technology in Education (URL: http://www.iste.org/index.html) has many resources for teachers and administrators. This society has developed standards for the use of technology in conjunction with national subject area standards, *National Educational Technology Standards for Students—Connecting Curriculum and Technology*. These standards include specific activities that teachers can use to assist students use technology for learning in diverse content areas. The society has also published *National Educational Standards for Teachers—Preparing Teachers to Use Technology,* which also presents many lessons, models and strategies for technology integration. Neither of these publications is available online, but they can be ordered from the society's webpage.

Both of the society's publications focus on education in the United States. In March 2002, the Education Sector of UNESCO published guidelines for the use of distance and open education for teacher education that have an international perspective. The literature cited involves primarily the preparation of teachers for basic education, but the guidelines are useful for any instructional programs that emphasize flexible delivery to students who are not necessarily at the same location as the instructor. The guidelines are available as a PDF file at this URL: http://unesdoc.unesco.org/images/0012/001253/125396e.pdf

I found no literature that directly examined the cost of ICT in VET, but whenever costs are mentioned in any context, the message is the same: Implementing ICT is expensive. In the four countries reviewed in this paper, the major constraints on use of ICT in Jordan and Malaysia are costs. Even educational institutions in wealthy nations find the cost of staying current with rapidly changing technology daunting (Van Dusen 2000). In addition, the costs associated with faculty development, technical support, and course design must be added to the direct costs of hardware and software, If instruction is delivered at a distance, however, there can be cost savings by eliminating the need for students to travel and, in some cases, to reside at the place of instruction. Tooling University, which is described in the next section, targets its online courses to upgrade companies' current workers. It cites savings in travel and minimum loss in production time as among its major benefits.

Information-Communication Technology and Vocational Education and Training

I would now like to focus specifically on applications of ICT in VET. Here the key question is to what extent can ICT applications contribute to the learning of the psychomotor, "hands-on," skills that are at the core of many occupations? This question was addressed in a webcast presented on June 6, 2002, by Dr. Chris Zirkle with a specific focus on distance education. (A recording of his presentation is available at this URL: http://www.nccte.org/events/profdevseries/20020606/indexNCCTE.html.

This URL has links to 38 Internet sources most of which have material on distance learning.)

Dr. Zirkle indicated that several sources are already offering online courses in occupations that typically require extensive hands-on practice. For example, Thomson Education Direct (URL: http://www.educationdirect.com/07-diploma_programs.html) offers courses such as these:

Mechanical	**Building Trades**
▪ Air Conditioning and Refrigeration ▪ Appliance Repair ▪ Auto Body Repair Technician ▪ Auto Repair Technician ▪ Diesel Mechanics ▪ Gunsmith ▪ Motorcycle Repair Technician ▪ Small Engine Repair	▪ Carpenter ▪ Furniture and Cabinet Maker ▪ Home Remodeling and Repair ▪ Plumber

Thompson Education Direct is a private company, but public VET agencies in the United States are also becoming involved in online delivery. The Oklahoma Department of Career and Technology Education produces curriculum materials that can be ordered from its Curriculum and Instructional Materials Center (CIMC). This center is one of the largest developers of curriculum in the United States and its products are used all over the world. CIMC has partnered with a company that specializes in online courses, Training Associates, Inc., to develop the following courses:

- Career Orientation (includes video)
- Nursing Skills
- Automotive Service Series: Electrical/Electronic Systems Specialist
- Introduction to Horticulture
- Pharmacology Skills

- Child Care Teacher Assistant
- Carpentry (includes video):
  - Floor Framing
  - Drywall
  - Interior Walls and Ceilings Finish
  - Insulation
  - Trusses

More information can be found at this URL: http://www.okcareertech.org/cimc/online.htm#Features.

Jergens, Inc., a private manufacturing company in the United States, was finding it difficulty to recruit employees with the level of metalworking skills it needed. The company developed training materials to upgrade the skills of its employees in these topics: shop essentials, CNC, metals, work holding, metal cutting, metal forming, EDM, and quality control. There was so much interest in this training from other companies that Jergens developed an online delivery capability that its calls "Tooling University." Individuals and companies can purchase training by the instructional hour or by groups of related courses. Among the promotional materials for this courses is a set of questions and answers. This is how a question about hands-on training with machinery and tools is answered:

> Tooling U has determined that even in industrial training involving machinery and other tools and objects, most of the training is of the type that can be implemented on the Web. Tooling U helps you get a jump start on knowledge that will lead to a more useful hands-on experience. You will need to see your employer, or possibly a local training firm or community college, for hands-on training. (This quotation is from a pdf file available on Tooling University's web site, URL: http://www.toolingu.com.)

Content can obviously be delivered electronically, but do students in online courses learn as well as when their performance is being observed by an instructor in a traditional classroom or laboratory? I found no research that examined this question for instruction in VET. Most studies have been in academic subjects and most have been done in higher (tertiary) education. These study typically compare one group of students who took a course in a traditional classroom with another group that studied the same content by distance education. The usual finding of such comparisons is that there are no significant differences in the tested performance of the students or in their satisfaction with the course (Russell, 1999). There is even a website that tracks these kinds of studies

(URL:http://teleeducation.nb.ca/nosignificantdifference/index.cfm?searchstring=2002&category=year&dosearch=1).

Most comparisons of distance and traditional courses have a number of weaknesses (Institute for Higher Education Policy, 1999). Students who take distance education courses tend to have different characteristics than those in traditional classes and dropout rates from distance education courses are higher (Diaz, 2002). Despite the methodological weaknesses in available studies, the preponderance of evidence indicates that for most content areas students learn as well by distance media as in the classroom. Whether this general finding can be applied to VET is, to the best of my knowledge, unresolved.

In 2001, Wonacott reviewed the available literature on the implications of distance education for VET. He identified several institutions that offer occupational courses online. Because the quality of online courses can be very variable, Wonacott recommends that prospective students limit their choices to accredited institutions. In the United States, most educational institutions are accredited by regional agencies. For students to receive financial aid from the federal government, institutions must have such accreditation. The U.S. Department of Education will also provide aid to students taking distance courses from institutions accredited by two national commissions: the Accrediting Commission of the Distance Education and Training Council (http://www.detc.org) and the Accrediting Commission of Career Schools and Colleges of Technology (http://www.accsct.org).

Wonacott's conclusion with regard to the effectiveness of distance education is similar to that above: the issue is unresolved, but he then adds:

> Nevertheless, to many, the increased access to learning at any time, in any place, for any learner overrides the other issues; growing numbers of offerings and enrollments suggest

> that ICT delivery–whether or not the best of all possible worlds–indeed meets a widely felt need in CTE [career and technical education].

The National Research Center for Career and Technical Education has sponsored a study of the use of ICT in VET in the United States. The data have been collected and analyzed. Unfortunately, illness of the principal investigator, Dr. Ruth Thomas, has prevented the publication of the final report of this research. Dr. Thomas has, however, made an oral presentation of her preliminary findings from which the following summary is taken (Briefing provided to Office of Vocational and Adult Education, U.S. Department of Education, February 15, 2001)

Thomas found that the technological infrastructure has a strong influence on teacher usage of the Internet. As would be expected, when a school's computers and networks are slow and unreliable, teachers are discouraged from usage. Conversely, when schools offer training, adequate hardware, technical support, and classroom access, teachers are more likely to incorporate the Internet in their classes. The schools she visited had been selected after a search process designed to identify high usage schools. Despite this search, she found that many of these schools lacked the resources they needed for full integration of ICT.

Thomas also found that schools provided Internet access to students who do not have such access in their homes. Such access serves to narrow the "digital divide" that some observers see as threatening children from economically disadvantaged families and less developed nations (Digital Divide Network, www.digitaldividenetwork.org/content/sections/index.cfm?key=20. Thomas's major conclusion is fully consistent with Cuban's (2001): Use of the Internet does not dramatically transform teaching; rather, it serves as a tool within the structure of teaching already in place.

The professional association of VET educators in the United States is the Association for Career and Technical Education. This association publishes the journal *Techniques* to inform its members about developments in their field. In October 2000, the total issue addressed the ways in which ICT was affecting VET. Most of the articles discussed efforts to meet the need for ICT workers, but one "The 21st Century Classroom," (Brown 2000) examined impacts upon instruction. The author presents examples of how selected secondary schools and postsecondary institutions are using ICT. In some occupations, such as printing and drafting, ICT has completely transformed not only methods of instruction but also the skills needed for the workforce. For other occupations, ICT has added to the teaching methods that are used. For automotive technicians, computer simulations allow instructors to teach diagnostics in the classroom rather than on an actual engine. Students studying electronics also use computer simulations to test circuits.

The article notes that many instructors need assistance in the integration of technology and that peer mentoring has been successful in meeting this need. Instructors who would be referred to as "early adopters" of technology in the Hall-Hord (1987) model discussed above assist their less experienced colleagues. Integration of the Internet into lesson plans is cited as the most critical aspect of using ICT. The Internet not only provides access to content, it also can broaden and deepen instructors' own knowledge and competence in using ICT.

Conclusions

The overall message of the sources I reviewed in developing this paper is that ICT is creating a new learning environment, but this change is occurring gradually. The costs of the technology, the structure and traditions of the classroom, and the need for extensive faculty development and support limit the rate of adoption of ICT. Even with these constraints, however, the dominant fact confronting education is the staggering amount of information available via the Internet and the rates at which this information and means of accessing it are increasing. There are two major implications of this fact.

The first implication is that to use the Internet effectively, students must be able to formulate questions, seek information, evaluate what is found, and integrate different sources to answer or modify the questions initially posed. In other words, students must acquire a sound general education. This was the primary theme of a paper presented here in Seoul in 1999 by Hermann Schmidt, the former president of the Federal Institute for Vocational Training of Germany. Dr. Schmidt delivered the keynote address to the Second International Congress on Technical and Vocational Education. His message was that in a world of accelerating change learning to learn must become the primary objective of all education. All education, including VET, must prepare students to be lifelong learners.

The second major implication is that the role of the teacher must change. Students who have access to all types of information do not need a teacher to stand before them and present information that they can obtain using their personal computers. Teachers must become guides, coaches, and facilitators of learning that is responsive to the particular needs of individual students. At a seminar organized by the Learning 2010 project in England, Anne Wright, Chief Executive of Ufi Ltd, described the change in learning as follows:

> The e-learning revolution is primarily a revolution for learners. Self-managed e-learning enables people to get the skills they need when they need, and to learn when, where, and how they want to in ways that that fit their lives and work (Caseley 2000, p. 4)

Ufi (http://www.ufiltd.co.uk) is a joint public-private initiative in the United Kingdom to upgrade the skills of the national workforce primarily through online courses. (Ufi is an acronym for university for industry.) Ms. Wright was referring to online, distance learning, but what she describes applies equally well to the classroom. It is of little importance whether the instructor is at the same physical location as the student or not. Clearly a teacher should be a guide to the learning process who assists students to establish their objectives, directs them to appropriate resources, and provides clarification and assistance as needed. In my judgment, as usage of the Internet grows, the importance of the teacher will increase, not decrease. The more sources there are to access and evaluate, the more important will be the guidance provided by the teacher.

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Assessment and recognition of learning and training

- Approaches in the European Union

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Abstract

The purpose of this paper is to present and discuss the principles, mechanisms and instruments that exist in the European Union for the assessment and recognition of learning, with special emphasis on vocational education and training. In addition, I present some current and possible future tendencies in this area. The structure of the paper is as follows.

The basic dilemma (1):
Mobility within the EU is encouraged
- freedom of movement a fundamental right to all citizens
- big economic and social challenges render an optimal allocation of labour important

The basic dilemma (2):
Education and training are national responsibilities
- reflect national/regional economic, social and cultural demands
- a diversity to be protected and further developed
Makes recognition a national undertaking

Principles for co-operation
Transparency of qualifications and qualification structures
Mutual trust and accepting that certain minimum standards exist

Existing mechanisms
'Automatic' recognition of qualifications in (a few) regulated professions
The 'general system' for recognition in other regulated professions
Constructing instruments to facilitate recognition
Establish national centres to disseminate knowledge on recognition

Existing instruments

Diploma supplements (higher education)

Certificate supplements (vocational education and training)

European CV

Europass

Existing national centres

NARICs - National Information Centres for the recognition of diplomas

NRPs - National Reference Points for the recognition of vocational qualifications

National Contact Points (Europass)

Current trends

Attempts to develop a single tool supporting transparency of vocational qualifications

Define common principles regarding validation of non-formal and informal learning

Further clarification of VET Quality criteria and principles

The purpose of this paper is to present and discuss the European Union principles, mechanisms and instruments for assessment and recognition of learning, with special emphasis on vocational education and training. In addition, I present some current and possible future tendencies in this area.

The basic dilemma (1):

Mobility is encouraged within the European Union for several reasons.

The freedom of movement is a fundamental right to all citizens within the Union. That principle was part of the original Treaty of Rome in 1957 and it has been confirmed and strengthened in all subsequent European Union Treaties.

In addition, big economic and social challenges render an optimal allocation of labour within the European Union important. Rapid economic development and a changing global production structure implies that large sectors of the European economy face the alternatives of radical change or annihilation. An ageing population and a (possible) future negative population growth further strengthen the necessity to utilise the existing labour force as efficiently as possible. Basically, this includes two elements: building a strong human capital base through education and training and an optimal allocation of labour. I will not dwell on the first element except for mentioning that a large number of actions to promote lifelong and lifewide learning are currently underway in all countries in the European Union. The second element, however, is directly related to this paper. Efficient allocation of labour presupposes mobility. Therein lies one of the reasons for the strong political support to the freedom of movement.

Several of the political intentions have been given solid practical contents. A number of 'technical' obstacles to mobility have been removed since the late 1950's. A citizen in any of the Member States does not need a residence or work permit if he or she decides to move to another Member State. In principle it is not even necessary to have a passport when travelling within the Union (the Schengen Treaty) – although it must be admitted that this principle is to a large extent offset by stricter security measures requiring a valid identification instrument when travelling. Furthermore, there are some examples of a beginning harmonisation in terms of taxation and social security benefits, even if there still is a long way to go in this area.

In spite of all this, mobility within the European Union is low. On average, less than two per cent of the labour force in the Union originates from another Member State. That figure has remained more or less stable for more than a decade.

Therefore, it seems safe to conclude that there still exist a number of obstacles to mobility. Insufficient economic incentives are a very important. An overall successful economic development and decisive regional policies have resulted in comparatively small differences in wages and standard of living within the European Union. Thus the economic benefits from mobility are relatively small whereas the costs (in a broad sense) remain high. This includes direct economic costs (transportation, setting up a new home etc.) as well as social and psychological costs (leaving relatives and friends, finding schooling for the children and so on). In addition, certain specific obstacles remain important.

The multitude of language is perhaps the greatest single obstacle to mobility. There are at present eleven official languages in the European Union (and shortly presumably another nine will be added). In an international organisation or a transnational company English is almost always the working language, but most workplaces are not of such a character and in addition is it necessary to cope with an everyday life in a foreign country as well. Thus, a good knowledge of the local language is in most cases almost a prerequisite for mobility and such knowledge is not widespread.

Problems resulting from social and cultural differences should not be underestimated, either. Things that are perceived as charming and different during a short-term visit as a tourist or as a participant at a conference could easily become irritating and hopeless when they occur repeatedly in everyday situations. To take but a few examples, hierarchies in work-life, gender perspectives, and ideas of what the education system should promote, are quite different in northern and southern Europe.

These linguistic, social and cultural differences will not disappear. That does not mean that they are constant over time. Social and cultural traits that are connected with obsolete technologies in agriculture, commerce and manufacturing industry will undoubtedly wither away, but it will take time and simultaneously there are contrary tendencies. In many places in Europe there exists an increasing interest in the existing culture, perhaps more on a local than on a national level. And, somewhat paradoxically, the importance of genuine language competence has increased in later years. Current practices such as work rotation, individual responsibility, customer contact from the work shop, etc, have increased the importance of being able to communicate in the local language at a fairly advanced level. This is in stark contrast to the situation in the 1960's and 1970's, when the existing Tayloristic principles of work organisation made it possible to take part in working life practically without any knowledge at all in the local language. Those days are forever gone!

Furthermore, there are still several obstacles of a 'technical nature' in existence, for instance differences between the Member States concerning taxation and social security systems. Finally, the fact that person's knowledge and competence is not automatically recognised from one

Member State to another constitutes in many cases a very real obstacle to migration. Such recognition is a national, not a Union responsibility.

The basic dilemma (2):

Recognition is a national responsibility for the simple reason that it must be compatible with the existing education and training system – and this is decidedly a national responsibility in the 'division of labour' between Community and National levels in the European Union. There are very good reasons for this.

The existing education and training systems have emerged over a long period of time. They reflect national or in many instances even regional or local economic, social and cultural characteristics that are worth protecting. In this way, the systems are fairly easy to adapt to changing conditions and thus they are able to respond to changing demands towards the education and training system.

In addition, the national or regional systems constitute a diversity to be protected and further developed. The fairly small scale facilitates experimentation where models of good practice can emerge (and where the consequences of fatal errors remain limited).

Further rationales for the perseverance of national and regional systems could be put forward but that would be superfluous. There is an overwhelming political support at all levels to maintain the present state of affairs - even though it tends to complicate recognition of competencies. To be able to overcome problems resulting from that, voluntary co-operation between the Member States is necessary.

Principles for co-operation

Over the years, several attempts have been made to overcome the dilemma that national recognition procedures could restrict the freedom of movement. Although some progress was made already in the early 1970's with regard to a number of regulated professions (see below), this has proved to be an area where further progress has been difficult to achieve. To my mind, the main reason for this failure is that until recently the approaches have been too ambitious.

They have been based on the conception that if qualifications are to be recognised, they must also be standardised or 'harmonised'. In other words, education and training systems would have to be moulded more or less in the same form. Most Member States have reacted against such proposals, either because it would imply the lowering of national education and training standards or because it would imply too drastic a restructuring. In the last years, however, new principles have been formulated that seem more promising.

Transparency of qualifications and qualification structures

Transparency of qualifications could be defined as '*the degree of visibility necessary to identify and compare the value of qualifications at sectoral as well as regional, national and international level*'. In particular, transparency could help job seekers explain their qualifications and competencies to potential employers, at national and international level, as well as to support employers and learning institutions in making qualified judgements on 'foreign' or 'external' qualifications. Increasing transparency could thus support transfer of qualifications and competencies between countries, sectors and enterprises, and in effect promote labour market mobility.

Mutual trust and accepting that certain minimum standards exist

The question of 'trust' is closely related to the issue of quality in vocational education and training programmes. If the authorities in individual Member States are confident that the quality in other Member States is sufficiently high, co-operation becomes much easier. This is an area where progress has been slow, but the 'Quality Forum' set up about a year ago has started to address the issue. The result of the overall work carried out so far can be considered as a first step seeking to achieve a shared understanding of quality development. The reports that have been drawn up and the information provided by the cases collected are intended to support the debate in various bodies at national and Community level, in order to progress in building a broad consensus on the guidelines to follow and the actions to implement. Some key elements necessary to support the definition of policies on the development of quality in initial and/or continuing training have emerged, including the following (although this is not a comprehensive list):

- Which principles may guide the development of quality in vocational training?
- What are the criteria for the definition of the quality of vocational training?
- How can a system aiming to ensure the quality of training be designed: what are the principal elements, how may the relationship between cost and benefit be accounted for?
- What may be the role of the State, the social partners and the training bodies in the design and management of a system of quality?
- How could a system of quality be evaluated and corrective measures developed?

Undoubtedly, much work remains until a comprehensive quality system could be said to exist. However, the fact that work is ongoing is in itself a confidence-building procedure that promotes mutual trust in the different systems.

Existing mechanisms

The 'general system' for recognition of professions

There exist directives from the European Commission on the mutual recognition of qualifications that allow European citizens who are qualified professionals in one Member State to practise their profession in other Member States. They apply to only to professions that are regulated in the host Member State, i. e. professions that cannot be taken up or practised in the host Member State without certain specified professional qualifications. Professions that are not regulated in the host Member State can be taken up without any formalities. Recently, a general system for the recognition of qualifications has been introduced. It covers all professions requiring qualifications and applies across a wide range of professions following varying levels of education and training. It does not harmonise training and does not guarantee automatic recognition, as recognition can be made conditional to a test or a period of supervised practise. The objectives are to simplify and consolidate the existing rules and procedures, as well as to introduce greater flexibility into the system and to further liberalise the free provision of services.

'Automatic' recognition of qualifications in (a few) regulated professions

Certain regulated professions, mainly in the health area, are covered by a special - and the longest standing - directives. It provides a minimum of harmonisation of training and automatic recognition of a professional title throughout the European Union. Thus, recognised qualifications in the specified areas from one Member State will be automatically recognised in any other State.

Constructing instruments to facilitate recognition of non-regulated occupations

Most occupations in the European Union are not regulated and although recognition of qualifications is not formally required the absence of recognition often is a real enough obstacle for a job seeker. Thus it has become increasingly important to facilitate recognition of a large array of qualifications.

The process started in higher education in a small scale in the 1980's, mainly to facilitate the movement of students from an institution of higher education in one Member State to another. In the field of vocational education and training, the process started much later. A decisive initiative was taken in 1998 with the establishment of the 'European Forum on transparency of vocational qualifications'. Initiated by the European Commission and CEDEFOP, the main task of the Forum was to support development and implementation of solutions to transparency of vocational qualifications. Consisting of representatives from all the Member States and the social partners, the Forum has been able to attract more political and institutional attention to the issue. The result of this work has been the introduction of a set of new European transparency instruments focusing specifically on vocational qualifications. I will present them shortly.

Establish national centres to disseminate knowledge on recognition

Obviously, whatever instruments or activities that are developed to facilitate recognition, potential users must know their existence. Beginning once again in higher education, national centres with responsibility for the handling and promotion of various instruments were formed in the 1980's. In vocational education and training, this process has started only recently with the establishment of national contact points and national reference points.

Existing instruments

Diploma supplements (higher education)

The Diploma Supplement is a document attached to a higher education diploma aiming at improving international 'transparency' and at facilitating the academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed. It should be free from any value-judgements, equivalence statements or suggestions about recognition. It is a flexible non-prescriptive tool, which is designed to save time, money and workload. It is capable of adaptation to local needs.

The Diploma Supplement is produced by national institutions according to a template that has been developed by a Joint European Commission - Council of Europe - UNESCO working party that tested and refined it. The template is available in the eleven official EU languages. A description of the national higher education system within which the individual named on the original qualification graduated has to be attached to the Diploma Supplement. This description is provided by the National Academic Recognition Information Centres (NARICs) and is available on the website: www.enic-naric.net

Certificate supplements (vocational education and training)

This is a voluntary supplement to a certificate that the holder gets upon request. At least in principle, because compared to the well-developed Diploma Supplement, actual work is still in an initial phase. The format for the Certificate Supplement has been developed by the Transparency Forum and it has been recommended for use in the Member States. A Certificate Supplement is not an individual document but contains information about the qualifications that the holder of the certificate normally possesses. It also provides information of what tasks the holder is prepared for. In total it gives a prospective employer supplementary information that is difficult or impossible to obtain from the certificate alone. More information about the Certificate Supplement and the format itself is available at the following Cedefop website:

http://www2.trainingvillage.gr/etv/transparency/certformat.asp

The recommendation to implement Certificate Supplements has been very well received by the Member States but the progress is as yet a little uneven. A few countries, among them Denmark, have already come a long way. Denmark has recently produced Certificate Supplement for all existing basic vocational programmes - and quite a few more advanced programmes as well, all in all about 180 programmes. The Certificate Supplements are furthermore available in four languages: Danish, English, French and German. The interested reader will find more information on this website:

http://www.ciriusonline.dk/eng/certsupp/

European CV

The European Commission adopted officially the format of the European CV in March 2002, and it is thus an official transparency instrument. The electronic format and guidelines for filling in the CV are available online in all the official languages of the European Union.

There exist, of course, already a large number of models for CV's and it is reasonable to ask what use there is for one more. Some answers could be given. One is that the European CV is identical in all the Member States, which increases its usefulness. A user does not have to worry that perhaps she or he uses a CV model that is considered adequate in the country where a new position is being sought. A second and perhaps more important answer is that the European CV emphasises also non-formal qualifications. Headings such as 'Social skills and competencies', 'Organisational skills and competencies', 'Technical skills and competencies', and 'Artistic skills and competencies' give persons opportunities to reflect on and present not only certified or verifiable qualifications but also non-formal or informal ones. A third answer is a little more future-orientated. The ambition is that the European CV should be easy to use in all official languages of the European Union by connecting it to a Thesaurus where all relevant skills, competencies and qualifications are listed. In that way, a user could get a more or less automatic translation of a CV that only needs to be written in the mother tongue. More information, the format of and the guidelines to the European CV, as well as examples of filled-in CV's, are available at:

http://www2.trainingvillage.gr/etv/transparency/curriculum.asp

Europass

European pathways for training refer to any period of vocational training completed by a person undergoing work-linked training as part of their training in another Member State, complying with a number of quality criteria. This involves, in particular, forming a partnership between the establishment where the person completes his training and the host body abroad. Within the framework of the partnership, both partners agree on the contents, objectives, duration, methods and monitoring of the European pathway.

In order to testify such a European pathway for training and to provide better transparency and greater visibility to these training periods abroad, a standard Community information document has been created: the EUROPASS Training. The EUROPASS Training, whose contents and presentation are defined at Community level, is established by the body responsible for organising the training in the Member State of provenance. This document provides the personal details of the trainee, information on the concerned training initiative – which includes the European pathway, and details of training periods abroad (host partner, mentor, etc.).

Because of the huge differences among the national training systems, the handling of EUROPASS Training is largely decentralised.

http://www.europa.eu.int/comm/education/europass/web.html

Other instruments

The above-mentioned instruments for recognition of qualifications are the most general and perhaps also the most important ones. There exist, however, quite a few other ones as well, including specific instruments such as the International (European) Computer Driving Licence, numerous formal or informal sector agreements that cover some or all Member States, etc. I will not go into them, but their existence demonstrate a need for future development in this area.

Existing national centres

NARICs - National Information Centres for the recognition of diplomas

The NARIC network is an initiative of the European Commission and was created in 1984. The network aims at improving academic recognition of diplomas and periods of study in the

Member States of the EU, the EEA countries and the associated countries in Central and Eastern Europe and Cyprus. The network is part of the Community's Programme SOCRATES/ERASMUS, which stimulates the mobility of students and staff between higher education institutions in these countries.

All EU and EEA States and all the associated countries in Central and Eastern Europe and Cyprus have designated national centres, the purpose of which is to assist in promoting the mobility of students, teachers and researchers by providing authoritative advice and information concerning the academic recognition of diplomas and periods of study undertaken in other States. The main users of this service are higher education institutions, students and their advisers, parents, teachers and prospective employers.

The NARICs were designated by the Ministries of Education in the respective countries, but the status and the scope of work of individual NARICs may differ. In the majority of States, institutions of higher education are autonomous, taking their own decisions on the admission of foreign students and the exemption of parts of courses of study programmes that students may be granted on the basis of education undertaken abroad. As a result, most NARICs do not take decisions, but offer on request information and advice on foreign education systems and qualifications.

The ENIC Network co-operates closely with the NARIC Network of the European Union.

The Network is made up of the national information centres of the States party to the European Cultural Convention or the UNESCO Europe Region. An ENIC is a body set up by the national authorities. While the size and specific competence of ENIC may vary, they will generally provide information on:

- the recognition of foreign diplomas, degrees and other qualifications;
- education systems in both foreign countries and the ENIC's own country;
- opportunities for studying abroad, including information on loans and scholarships, as well as advice on practical questions related to mobility and equivalence.

More information about the NARIC and ENIC networks is available at:

http://www.enic-naric.net/index.asp

NRPs - National Reference Points for the recognition of vocational qualifications

In every Member State (European Union and European Economic Area), a national reference point gives access to information on the vocational education and training system. To achieve greater synergy, the national reference points are linked in a network. The tasks of these National Reference Points include:

- to achieve, as a visible 'central point', an overview of, and capability to use, information resources on the E&T systems at national level;
- to actively co-operate with European institutions for information, e.g. through networks;
- to support individuals and institutions in other countries with information promoting mobility and transparency of vocational qualifications;
- to support the implementation of the Forum proposals at national level.

It is important to underline that each country chooses a model reflecting its political and institutional set-up, which would allow the tasks and responsibilities above to be fulfilled. National reference points have been set up in most Member States.

More information and links to the individual national reference points are available at:

http://www.cedefop.gr/transparency/refpoint.asp

National Contact Points (Europass)

Since all activities concerning EOROPASS are decentralised, it is necessary to contact the relevant National Contact Point. Only these are entitled to distribute the "EUROPASS Training" to organisations in their country that send trainees abroad in the framework of European pathways. Full addresses are available at (pdf format):

http://www.europa.eu.int/comm/education/europass/contact.pdf

Exactly as in the case of instruments for recognition, there exist other national centres. Some concern all Member States, such as the centres that administer Mobility programmes (Socrates, Leonardo,...). Others are more specific. Each type of centre is of course qualified to handle their respective task, but it is sometimes difficult for the average citizen to know precisely what centre to contact.

Current trends

In recent years, an increasing willingness to invest more in education and training among individuals and organisations as well as on various political levels has been accompanied by a growing concern that the resulting qualifications should be recognised throughout the European Union and not only in an individual Member State. The numerous new initiatives in the field of recognition of qualifications, briefly discussed above, that have emerged over the last few years is partly a response to this challenge. Development has been particularly intense concerning vocational qualifications. Most initiatives, however, have been taken in isolation from the others, with the resulting multitude of instruments, agreements, national centres, and so on. The fragmented structure is not easy to oversee, not even for professionals in the area. To the ordinary student, worker or employer, it is of course even more difficult. A simplification of the structure seems to be called for.

Initial steps in that direction have been taken very recently at the European level. Together with related initiatives the process - 'Increasing co-operation in European vocational education and training' - seems to be underway. A clear mandate at European level already exists and it is most likely that it will be strengthened further in the months to come. There is also support for the process - often referred to simply as the 'Bruges process' - among the Member States.

Since the process is still evolving, it is not possible to present a complete overview of a new structure. Still, a broad outline could be given.

- The process will have a broad scope, including not only the Member States and the EEA countries (Iceland, Liechtenstein and Norway) but also the Candidate Countries and the social partners. The social partners formulated a 'Framework for Actions' in March 2002 where they commit themselves to a comprehensive engagement in education and training, including questions relating to the recognition of qualifications.
- The process is based on co-operation and a certain co-ordination is necessary. This applies to internal as well as external co-ordination. Externally, the process must be co-ordinated with initiatives stemming from the Lifelong learning policies being implemented throughout the European Union, as well as with political (the Education Council, the European Parliament, etc.) and multipartite bodies (the Advisory Committee on Vocational Training, for instance).

Internally, the work of several working groups dealing with specific issues must be co-ordinated. Among the most pressing issues where the process has already started, the following have direct relevance to recognition and assessment.

1. Develop a single framework supporting transparency of vocational qualifications. The instruments presented above relate partly to different situations and respond to various needs, but there are also obvious connections between them. The challenge lies in constructing a framework where the variety of purposes can be maintained but where the fragmentation between a multitude of instruments becomes minimal. That would also imply that the number of national centres on recognition and qualification could be reduced, so that end-users will know exactly where to turn in these matters. A related issue concerns the possibilities to develop a system for the transfer of 'credits' in vocational education and training from one country to another. Such a system, although far from perfect, already exists in higher education and it is a matter of high priority to develop something similar also for vocational training. Several concrete proposals on these different matters have already been put forward and they are being analysed and discussed at present.

2. Define common principles regarding validation of non-formal and informal learning. This is an aspect that I have not given much consideration in this contribution, since it is a very complex issue that would need a separate presentation. Still, these matters lie in the core of all discussions on lifelong and lifewide learning and they have consequently received a lot of attention in later years. That said, it is only fair to conclude that concrete progress has been slow so far. The inclusion of this topic in the broader process of 'Increased co-operation..' implies, however, that serious efforts must now be made. That becomes even more obvious from the close interrelation between the objectives set up by the European Union to promote lifelong learning and the possibilities to assess and recognise non-formal and informal learning. The first step, where some progress has already been made, is to identify and characterise existing principles in the Member States and Candidate Countries. On that basis, some common principles could probably be constructed but to be quite honest about it, any immediate progress is not very likely in this field.

3. Further clarification of VET Quality criteria and principles. As pointed out earlier, some sort of quality assurance in vocational education and training is a prerequisite for the establishment of genuine trust between the Member States. As in the case of validation of non-

formal and informal learning, a mapping of existing practises has already been made. Future work will concentrate on the more difficult issue of constructing common criteria and principles. This has of course also extremely high relevance for the possible development of a credit transfer system in vocational education and training. It seems possible that at least some common minimum criteria could be established, but it remains an open question if more developed common quality standards will evolve in the near future.

Concluding remarks

The development towards the facilitating of assessment and recognition of formal as well as non-formal vocational qualifications has recently gained momentum in Europe. On a political level, this development is associated with a broader process with the ambition to make Europe a world leader in the production and maintenance of human capital by the year 2010. That ambition, in turn, is based on the conviction that future likely problems in the labour market are best remedied through education and training and an optimal allocation of labour. Several initiatives to facilitate mobility, not only concerning recognition, have been launched over the last years.

It is of course premature to make any assessment of the new initiatives, since several measures to promote recognition have hardly been launched yet. The rather cumbersome European decision-making procedures, with preparations, negotiations and compromises, indicate that the process will take some time and that the end product probably will be different from what is envisaged today. However, in view of the present favourable political mandate it is not unreasonable to assume that future progress will made, so that vocational qualifications, formal as well as non-formal, will be easier recognised in other countries than the home Member State in a few years time.

Recognition of vocational qualifications is not the only and not even the most important obstacle to mobility, however. Therefore, the possible contribution of more generous recognition procedures to future mobility on an overall level is probably quite small. This does not exclude that the prospective labour market will become enlarged, both from the workers' and from the employers' point of view. Individual enterprises and perhaps even sectors might therefore benefit from increasing recognition. Above all, however, it is the individual citizen -

not the collective as such - who for one reason or another wants to work in another Member State who will benefit the most.

Financing mechanisms for VET

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Abstract

The transition to the knowledge society depends on and influences the extent to which it is possible for individuals to take part in vocational education and training. This raises among other things the questions of who will pay for VET over the lifetime and how. The answers to those questions depend on what the benefits of VET are and who enjoys them, and how much it costs and who pays for it. Any light that can be shed on these questions, will make it easier to assess the nature and risk of market failures that may impinge on the ability of individuals, employers, and society to finance VET over the lifetime, and to evaluate financing mechanisms that currently are being tried.

Following the introduction, the paper examines the incentives for individuals to invest in VET over the lifetime and how they might be strengthened. It summarises evidence on internal rates of return based on simulations carried out by the OECD, to provide estimates on the incentives of individuals and employers to invest in VET over the lifetime. It then evaluates the relative importance of different elements of costs driving internal rates of return, and tests the potential impact of different policies that act on those drivers.

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The article then provides an overview of general approaches to financing VET over the lifetime, and then goes into more detail in describing recent innovations in the area of mechanisms that facilitate the co-finance of continuing VET. It then details the different types of co-finance mechanisms on the basis of recent experience and then discusses them in view of the earlier analysis of what drives benefits and costs, and the equity issues that arise in continuing VET.

Introduction

1. "Knowledge economy", "knowledge society", and "globalisation" are imprecise as terms for describing economic activity and society today. But they are associated with some readily observable large and abrupt shifts in skills and qualifications requirements. Such shifts are associated in turn with shifts in the quantity, nature, and timing of learning that allows individuals to accommodate change. This is at the heart of the notion of "lifelong learning" and "VET through the lifetime".

2. The direction of causality is not unambiguous. On the one hand there is evidence that the introduction of new ICT equipment and changes in work organisation have immediate and obvious impacts on the skills and know-how that are required of new and existing employees (OECD 1996a). On the other hand there is evidence as well that the willingness of employers to invest in ICT and the precise nature of such investments are conditioned, in part, on present qualifications of the labour pool and the feasibility of acquiring new and different qualifications. In fact, judging by which countries have been most successful in the transition to becoming "knowledge economies", it can be argued that at a more aggregate level, the knowledge economy/ knowledge society/globalisation have not simply *contributed* to shifts in the demand for human capital. They have been *enabled* by prior shifts in the supply of human capital, as proxied by the rising levels of educational attainment reached by each succeeding generation since the second world war (OECD 2000a; [2]). Regardless of the direction of causality in the past,

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[2] Also see the international comparative analyses of national education systems, qualifications structures, work organisation and productivity in the United Kingdom and other countries, carried out in the 1980s and 1990s by the National Institute of Economic and Social Research, London).

this much seems obvious today: learning in general and VET specifically matter for economic, social, and cultural reasons; their level, nature, and timeliness matter; they seems likely to matter more in the future.

3. But, if VET matters now and is likely to matter more in the future, it would seem that, at the margin, society must invest *more* in VET. This raises the questions of *who will pay* for VET and *how*; this raises in turn more fundamental questions about how to ensure that investment in VET is economically and financially sustainable. The discussion below addresses these questions. It examines evidence on the economic incentives to invest in VET and the prospects for strengthening them. It then examines selected recent policy initiatives to facilitate the finance of VET over the lifetime, and considers how well they address the economic and social issues associated with investment in VET.

Economic incentives to invest in VET over the lifetime

4. The incentives (and dis-incentives) to invest in VET over the lifetime are far-ranging in scope and vary from individual to individual in their absolute and relative importance. They include factors associated with work (is it useful, likely to enhance employability and earnings), family (does it interfere with family responsibilities), prior educational experience (what level, was it positive), learning needs and styles (are pedagogies appropriate to particular learning needs, are the hours of study compatible with professional and family responsibilities) (OECD, U.S. Department of Education 1999; OECD 2002a forthcoming). Judging from evidence on participation by persons with different educational attainment levels and literacy levels, past educational achievement would appear to have considerable influence on those incentives, with those having high levels of achievement being more likely to invest in VET. (OECD and Statistics Canada, 2000). Some of those incentives may be related to the extent to which initial education and training has equipped and motivated individuals to learn later on. But at least some of those incentives entail economic considerations.

5. To the extent that the incentives to invest in VET over the lifetime are economic in nature, it is important to deepen our understanding of them for two reasons. First, economic incentives are subject to the influence of public policy; to the extent that stronger economic incentives can increase investment in VET, government may have a role to play. Second, the

strength or weakness of economic incentives has a profound effect on the sustainability of such investments over the long-term. If investment in VET over the lifetime cannot generate sufficient private returns to pay for itself, the public sector will have to either mandate private expenditure through regulation or fund it itself. If such costs are imposed by regulation, they effectively add to the cost of doing business for enterprises, thereby impinging on their competitiveness, or represent a loss of income to individuals. If the public sectors assumes the cost, such spending becomes a form of consumption, rather than investment; this heightens the risk that it will have to be rationed and/or that it will displace other forms of consumption.

6. As part of its work to explore a range of issues related to how "lifelong learning" might be financed, the OECD Secretariat set out to collect evidence of the economic incentives to invest in lifelong learning and undertake analyses on how those incentives might be strengthened. Much of that work is directly relevant to the issue of financing VET over the lifetime. It is introduced and discussed below.

One approach to evaluating the incentives to invest in VET over the lifetime

7. What does an investment in VET over the lifetime cost, and do the benefits of that investment justify the cost? There are a number of ways to evaluate the economic incentives to invest in VET over the lifetime; ideally one would like to account for all the benefits and costs, economic as well as non-economic. In considering the benefits from the perspective of the individual one can take account of the wage differentials associated with such investment, increases in productivity, employability, and mobility. On the cost side one can take account of the direct costs such as fees, transportation, and instructional supplies for training courses, as well as indirect costs such as foregone earnings and foregone leisure. There also is the cost of capital to consider -- the interest rate that one is implicitly paying when drawing down savings to replace foregone earnings, or that one explicitly pays when borrowing to cover cost of living during VET away from the job. Benefits from the employer's point of view would include that share of increased employee productivity arising from VET that is not compensated in the form of higher wages, as well as the benefits of enhanced employee flexibility, for example. Costs would depend on how much of the direct costs an employer pays, as well as whether an employer foregoes production during the period of training. In considering benefits from the point of view of governments, there would be increased tax revenues attributable to higher

earnings and perhaps a more adaptable labour force that can in turn improve overall economic performance. Costs might include any government share of education and training programmes as well as transfer payments made during training. But in evaluating incentives, the ideal is difficult to achieve because of the difficulty of observing many components of costs and benefits, particularly the non-economic ones. The *internal rate of return* is one of the more common ways of putting *economic* benefits and costs together in an analytical framework that allows one to evaluate the benefits of an investment relative to its costs[3]. It is defined as the rate at which the future benefits of an investment must be discounted such that their net present value equals the cost of the investment.

8. Although it is useful to evaluate the incentives to invest in VET from multiple perspectives, the discussion below of investing in VET *over the lifetime* concentrates on just two: that of the individual and that of government. Part of the reason is pragmatic: the benefits and costs of VET during the lifetime of individuals is harder to observe inside enterprises.[4] But it makes sense as well to focus on individual and governmental perspective for policy reasons, as well. In contrast to the firm-specific VET that is undertaken by firms for new employees or when new equipment is acquired, for example, VET *over the lifetime* is more *discretionary* in nature. It is not undertaken with regard to short-term configurations of existing plant and equipment, work organisation, and business plans. Rather it is undertaken with regard to less "deterministic" considerations including options for future employment possibilities, longer-term career development goals, and other goals regarding life-style preferences and individual preferences regarding work, leisure, and VET.

9. One of the barriers to evaluating incentives to invest in VET over the lifetime is that, in contrast to initial VET (and formal education in general), there is little empirical evidence that permits one to measure the relevant costs of and subsequent stream of benefits resulting from

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[3] The internal rate of return is that discount rate at which Net Present Value of benefits and costs are equal. It is calculated as follows:

$$\sum_{t=0}^{d-1} C_t/(1+IRR)^t = \sum_{t=d}^{64-a-d} B_t/(1+IRR)^t$$

where C_t = costs of the investment in period t ($t \in 0, d-1$) ; B_t = benefits over time ($t \in d, 64-a-d$) ; d = number of years of study
a = age at start of study ; 64 = age at last year in the labour force

[4] The potential payoff for firms can take the form of short- and long-term profitability, as well as market capitalisation. See Bassi et al (2000).

such investments. That has been both a statistical problem of definition and measurement (OECD 1997a) as well as a reflection of the reality that lifelong learning and VET over the lifetime are more the rule than the exception, and thus there is only a limited base of experience on which to draw [5]. But the last factor also begs the question of whether the perceived under-investment in learning over the lifetime is precisely because the economic incentives for such investment are weak[6].

10. It was with these concerns in mind that the Secretariat proceeded to identify relevant data and carry out an analysis. The Secretariat's approach was to use an existing data set that was collected in the late 1990s to calculate internal rates of return to formal education (OECD 1998a, pp. 360-363; also see OECD 1998b pp. 68-75). This data set provided information on the direct costs of education; and, age-earnings data through age 65, covering employment-related earnings, investment-related earnings, transfers, and tax liabilities. Using this data the Secretariat simulated "private internal rates of return", and "fiscal internal rates of return". The former calculates the internal rate of return from the perspective of an individual pursuing further studies; the latter calculates it from the perspective of the public purse. The calculations are done for typical 40 year-olds stopping work and returning to formal education to acquire the next higher level of qualification. Two cases were simulated: that of a person who had completed lower secondary education and, at age 40, stopped work to return to full-time study in the formal education system to complete upper secondary education; that of a person who completed upper secondary education and, at age 40, stopped work to return to full-time study the formal education system to acquire a first university qualification (typically 3 or 4 years). Internal rates of return were estimated for these two cases according to four scenarios that correspond to different policies and institutional arrangements [7]:

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[5] This fact in the midst of sweeping changes in society, the economy, and the workplace, and fundamental transformation in the production, use, and value of knowledge has led to a widely held perception that there is severe and unsustainable under-investment in learning beyond initial education. It is this perception that has driven initiatives to make lifelong learning for all a reality (OECD 1996b; European Commission 1995; European Commission 2001).

[6] Cohn and Addison (1998) piece together a considerable body of evidence from several different countries on returns to, among other things, vocational and occupational training . Their analysis suggests that the returns in most countries are weak.

[7] The analysis estimates internal rates of return on the basis of scenarios that vary the level of *costs* and *who bears them*. It does not estimate returns under scenarios that vary the wage award for a given level of education attainment, or allow the possibility for wage adjustment on the basis of

- Scenario 1 -- This represents the situation in which the individual pays the direct costs and foregoes earnings; it corresponds to the situation in which adults returning to education would pay full fees, and neither the employer nor the government would replace any of the income foregone during the duration of studies. This corresponds to a situation in which an individual is operating on his or her own in choosing and pursuing options for VET over the lifetime.

- Scenario 2 -- This represents the situation in which the individual pays no direct costs, but does bear the cost of foregone earnings, covering cost of living with personal savings or a loan, for example. This corresponds to a situation in which the employer reimburses an individual for the direct costs of VET, or in which public providers provide VET to adults at no cost.

- Scenario 3 -- This represents the situation in which the individual bears direct costs, but does not forego earnings, as in the case, for example, of an employer who pays the salary of an employee on leave, or the government paying an allowance to offset the loss of income.

- Scenario 4 -- This represents the situation in which the individual bears no direct costs and does not forego any earnings, as in the case, for example, of an employer sending an employee back to university on full salary, with the employer paying all fees and other direct costs. The only cost to the individual occurs if, when the employee returns to work, he or she starts at a salary that is lower than the salary would have been paid if the person had continued to work without acquiring a higher qualification.

11. In addition to the calculations carried out according to scenarios 1-4, a second set of calculations was carried out for identical conditions, except the duration of education was reduced by half. This would correspond to the situation in which an individual would receive

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partial attainment of the next level of educational attainment. The analysis was done this way to ensure that at least one of its legs rested on an empirical base. Presently there are not fully developed institutional arrangements that would allow individuals to reap financial rewards for "intermediate" levels of attainment or qualifications acquired through non-formal learning (see Colardyn (2002), pp. 31-33).

sufficient academic credit for his or her work experience to reduce the number of credits needed and the duration of studies by half.

12. It was recognised at the outset that the usefulness of the analysis was limited by a number of factors. The first limiting factor is that the data are old. In the case of most countries the data are for 1995 (for further details on the sources see OECD (1998a, pp. 416 - 417). Even though the data are old, the relative values for the different values probably have not changed much; compared to other long intervals of time, prices and wages have been stable in the time since the data were collected. In any case, the data are adequate for testing the methodology; the outcomes are only indicative.

13. A second is that the scenarios are stylised. Adults with twenty years or so of work experience rarely withdraw from the labour force to pursue extended studies on a full-time basis, let alone acquire a next higher level of qualification. Though it is rare for adults to stop work and participate full-time in education for extended periods of time, there is value in understanding the relative importance of different factors in determining whether such an investment is economically efficient. If one can get better identify and evaluate the relative importance of factors that amplify or diminish the incentive to invest in *long-term, full-time* study, that may make it easier to develop strategies for strengthening the incentives to invest in other forms of lifelong learning. Moreover, much of the labour market analysis underlying the shift in public policy towards encouraging lifelong learning suggests that "once-and-for-all" initial education is increasingly inadequate to sustain a lifetime career; in the future, individuals can expect to spend more time in extended periods of re-qualification training. Thus, while the scenarios are "exceptional" if not unrealistic in the context of prevailing policy and institutional arrangements, they can serve as targets for the framework conditions that public policy should achieve. Finally, in constructing the scenarios this way, it makes it easier to compare the incentives to invest in a traditional "front-end" model, vs. investing in a "lifelong learning" model.

14. A third factor that limits the usefulness of the analysis is that it depends critically on an assumption about the trajectory that the age-earnings profile would take after an individual acquired a higher level of qualification and resumed working. The age-earnings profile of an individual after acquiring a higher level of qualification are "guess-timates" based on the assumption that a 43 or 44 year-old having just acquired a higher level of qualification would

earn a little bit more than a person with the same qualification just starting to work. It is assumed as well that for the first several years after resuming work, that person's work-related earnings would rise more quickly than they would the earnings of others in the same age group who have not acquired a higher qualification. The Secretariat has taken this approach because there were not readily available longitudinal data that captured age-earnings profiles after persons acquired a higher qualification. Such an approach seems justified by patchy evidence that does exist on the relation between adult learning and earnings [8]. Since the time that the initial analysis was done, the Secretariat has identified a data set that may contain the needed data. However, the lack of empirical evidence is linked, as with the preceding point, to the fact that this kind of "lifelong learning" is exceptional.

15. A final factor is that the calculations for scenarios 1bis - 3bis hinge on an assumption that an individual would be awarded academic credit equivalent to 1 ½ - 2 years of full-time study, on the basis of approximately 20 years of work experience. A number of countries have years of experience with the practice of awarding academic credit for work experience, and for substituting work experience for academic qualifications in granting admission to higher levels of education. However, there are no data on the results of this practice. Thus it is impossible to say what percentage of adults have benefited from it, and how much it has reduced the duration of further education and training. As a rule such practices are regulated at the level of institutions; in any case, there are no quality assurance procedures to guide a robust application of the practice. Thus, the purpose of carrying out this element of the analysis is to demonstrate the potential impact that the widespread application of this practice could have on the incentives to invest in further learning.

16. On balance it was recognised that there was value in carrying out the analysis to test the usefulness of a methodology based on "unpacking" internal rates of return in such as way as to isolate the impact of different factors -- some of which are susceptible to being influenced by

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[8] One study that used 50 years of longitudinal data for a cohort of Swedish men found correlation between earnings and initial education declined with age, while the correlation between earnings and participation in adult education rose to a peak at age 43 before declining, though more slowly than the first correlation. The correlation between participation in adult education and occupational status was stronger, increased steadily, and by age 56 nearly equalled that of initial education. The general conclusion of the study was that in the case of the cohort under consideration, adult learning had a strong influence on occupational status and earnings (Tuijnman, 1989).

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policy -- that drive them[9]. Moreover, in the case of the second and fourth limiting factor (and possibly the third), it is not essential that the scenarios approximate the reality of the environment of current policy and institutional arrangements. Rather, the analysis serves to point out the *potential value* of new initiatives in this area.

Results of the OECD analysis

17. The results of the analysis are summarised in figures I - IV. Figure I presents *private internal rates of return* (the internal rates of return to an individual); Figure II presents *fiscal internal rates of return* (the returns to government). There is a panel for each of the countries included in the analysis. For each country there are four sets of bar graphs showing internal rates of return to the investments in acquiring two different levels of educational qualification. The first, labelled "initial" presents returns to completion of upper secondary and completion of a first university degree -- *before entering the labour market for the first time*. This corresponds to the traditional timing of education, such that individuals complete upper secondary education around age 18 and the first university qualification around age 22. These data show rates of return in the absence of lifelong learning and are presented to provide a reference point for evaluating rates of return under the various scenarios. The remaining bar graphs correspond to the four scenarios sketched out above. In all cases returns are calculated for men and women; within each bar there is indication of returns to completion of upper secondary relative to lower secondary education, and to completion of a university qualification relative to upper secondary education. Figures III and IV presents returns for the three scenarios calculated on the basis of the duration of education being cut by half. The values for the original calculations are indicated by a symbol to facilitate comparison.

18. Keeping in mind the caveats outlined above, there are a number of observations worth noting. First, the analysis suggests that in the absence of interventions that reduce direct costs or indirect costs, the incentives for a working adult to invest in lifelong learning are rather weak. If an individual has to take full responsibility for the cost of fees and so forth, and draw on savings and/or loans to cover costs of living, the returns are substantially lower than if that investment

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[9] The Swiss authorities provided the Secretariat with a voluntary contribution to help underwrite the cost of the analysis.

had been undertaken as part of initial education and training. The calculated returns also are well below the usual market interest rates that are typically used as a cut-off for poor investments. Occasionally the calculated returns are negative. This suggests that insofar as participation in VET over the lifetime is lower than a level that is considered desirable, weak economic incentives may be partly to blame.

19. A second point is that the data that are available clearly suggest that the incentives for less qualified persons to invest in VET over the lifetime are universally weaker than the incentives for more qualified persons. If this really is the case, it would provide additional explanation as to why virtually all studies of participation in continuing education and training show the poorly qualified being substantially less likely to participate than more qualified persons. The economic incentives are weaker (to the point of being negative in some cases). This would be in addition to all the other barriers related to inappropriate pedagogy, lack of employer encouragement, poor motivation, etc.

20. A third point is that the returns for women are substantial, and, except in Norway, nearly always higher than the returns for men. The advantage is greater (in percentage terms) for the scenarios in which fees are not paid. This is because for women fees represent a greater proportion of total costs (fees plus foregone earnings) than they do for men. The advantage remains even for scenarios where fees are paid. However, readers should refrain from inferring too much with regard to the rates of return to lifelong learning for women relative to those for men under the different scenarios. The earnings data for both are derived from age-earnings profiles that are based on educational attainment acquired *before* entry into the labour market. The profiles are *not* based on earnings observed *after lifelong learning*.

21. A final point is that the fiscal returns -- the internal rate of return to government -- to investment in lifelong learning under the various scenarios tend to be substantially smaller than the returns for individuals. The changes in fiscal returns as scenarios vary do follow the same patterns as the changes in private returns except for scenario 2 and scenario 2-bis in which governments rather than individuals pay the direct costs.

What do the results imply for policy concerning VET over the lifetime?

22. The analysis described above serves to provide insights into the returns from investment in lifelong learning, what drives them, and how those returns -- and the incentive to invest in

VET -- might be increased[10]. While one must be mindful of the caveats associated with the simulations carried out in the analysis, the analysis does suggest lessons that might be kept in mind as authorities consider policies to increase VET over the lifetime.

Who should pay for VET over the lifetime?

23. First, the analysis offers insights that are relevant to the question of *who should pay?* Regardless of how much additional money governments may be able to invest in VET over the lifetime of individuals, it seems fairly clear that additional private resources -- from individuals and/or employers -- also will be needed [11]. The analysis provides further basis for the logic of increasing private finance of VET. If the assumed earnings gains that have been used in the analysis are close to being correct, the analysis provides useful insights into what constitutes the *appropriate framework conditions* that must be achieved in order to raise the private returns to lifelong learning. Moreover, the private returns relative to the fiscal returns (returns to government) appear to be sufficiently large as to justify private actors shouldering a major burden in financing VET over the lifetime[12].

24. However, it would be wrong-headed to interpret the results as suggesting that government should abandon financial responsibility for VET over the lifetime. The analysis

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[10] In principle there are two ways of increasing the potential rate of return on a future investment. One is to observe past returns for different options and then to invest in options with rates that are above a benchmark level, and to dis-invest in options with rates below that level. The other is to dis-aggregate observed rates of return in order to identify the factors that drive benefits and costs, and to then pursue active strategies to increase benefits and reduce costs. For another example of this approach see Wolter and Weber (1999).

[11] The Secretariat on its own and in co-operation with some Member countries, has attempted to estimate the total cost of implementing lifelong learning. The results, which naturally depend on how ambitious or modest the lifelong learning agenda is in a particular country, range from less than 0.5 percent of GDP in countries with highly developed education systems and high levels of initial education, to more than 3.0 percent in countries with low attainment levels and low illiteracy levels among adults (OECD 1996b, chapter 8; OECD 1999a, chapter 1; OECD 2000a). These estimates did not take into account foregone earnings as a possible cost. The Norwegian authorities, as part of an exercise to explore options for financing subsistence costs of adult learners, estimated in the late 1990s that public authorities were already spending on adult education and training initiatives an amount equal to an estimated to be between 1.5 and 3.0 percent of GDP (Ministry of Education and Research, Norway, 2001, chapter 8).

[12] For a fuller discussion of the logic of allocating financing responsibility see Gasskov (1994), pp. 3-16.

suggests that poorly qualified adults have low rates of participation in learning activities for *economic* reasons, as well as well as for the non-economic reasons that have been documented (most recently in OECD 2002a forthcoming). Thus, one inference to draw is that at least some of the public resources to support VET over the lifetime should be targeted on the poorly qualified. The means for doing this are discussed in the discussion below on financing mechanisms.

25. The analysis also provides insights that may be useful in the discussion between social partners as to how to share the financial responsibility for VET over the lifetime. In calculating "private internal rates of return, the analysis in fact embraces benefits and costs only from the perspective of the *individual*. It does not take into account the benefits and costs accruing to employers because the analysis for which the data were originally collected was designed to calculate internal rates of return to initial formal education (*preceding* employment). However, even with that limitation, the analysis is potentially useful for indicating where issues of co-financing should be addressed. In this regard there are two results that seem particularly noteworthy.

- First, poorly qualified persons realise comparatively low returns to further learning [13]. In addition to suggesting that government should cover more costs for this group (as discussed above), this finding also suggests that employers (as well as trade unions) might consider strategies for strengthening these comparatively weak wage incentives.

- Second, the high rates of return for the scenarios under which individuals do not forego any earnings (scenarios 3, 4, 3bis, 4bis) suggest that individuals could, in fact, bear *some* of the costs of foregone earnings and still enjoy relatively high rates of return.[14]

26. The issue of "who should pay" depends in the final analysis on the answer to "who benefits". Within the framework of the analysis described above, it is possible to map the flow

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[13] This is consistent with the conclusions of another analysis carried out using data from Switzerland (Wolter and Weber (1999).

[14] The rates of return for the scenarios in which individuals do not forego earnings are calculated on the basis of employers paying the salary (returns for the scenarios in which individuals do not pay direct costs assume that such costs are paid by government). Thus, high "private rates of return" refer to returns to individuals. The analysis provides no indication of what the returns would be for employers; such returns would include: increases in labour productivity that are not compensated for with higher wages; enhanced employee adaptability, e.g.

of benefits between governments and individuals. Admittedly that is not complete. A more comprehensive analysis requires some basis for estimating benefits and costs as they accrue to employers. But the limited analysis does provide the basis for launching negotiation between employees and employers. Indeed, it can serve as a framework within which it is possible to introduce evidence on the benefits and costs of further learning that accrue to employers. Subsequent negotiation about cost sharing can then proceed on the basis of that more enriched picture.

27. But regardless of what is shown by even the most detailed picture of benefits and costs, there still is the question of how to raise the rates of return sufficiently to ensure that overall benefits offset overall costs, thus ensuring adequate incentives to invest in lifelong learning? The following section addresses this issue.

How can internal rates of return be raised?

28. In a world in which there were perfect information on rates of return to all investments it might be useful to know what the returns are for all possible forms of lifelong learning in order to make informed decisions about where to invest, how much to invest, who should invest. But there are certain qualities inherent in lifelong learning and VET over the lifetime (if not in *all* education and training investments) that make such calculations impossible. Indeed, such an implicit approach to "portfolio management [15]" risks being counter-productive for public policy[16]. For one thing, in the present stage of policy development and implementation, VET over the lifetime is largely a policy goal, not a present reality that can be evaluated using empirical data. Second, even if it were possible to observe rates of return to recent past investment in forms of VET over the lifetime, such observed returns would not be valid indicators of future returns except insofar as the past characteristics of education and training, and individuals, and past contextual factors that affect benefits and costs, remained static into

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[15] An approach towards increasing returns by dis-investing from areas where returns are low, and investing in areas where returns have been high.

[16] A substantial share of the literature on rates of return to education and training has focused on observing rates of return to *past* investments, while correcting for the influence screening and signalling in order to evaluate the economic reward of cognitive development (see Harmon et al 2000). The implicit assumption behind this approach is that economic efficiency should be the objective function of human resource investment policy.

the future. Thus, as soon as there is improvement in the quality of a particular kind of training improves, or an increase in the wage rate for persons with a particular qualification, future returns get distorted. Third, such an approach risks subordinating political and social goals (improving qualifications of adults with low literacy levels, e.g.), to a narrow and imperfect measure of economic efficiency. Finally, such an approach is static if investments were guided purely by rates of return observed from past investment, increased investment in those learning activities with high returns would lead to diminishing returns in the future as the market would be flooded with the heretofore high-return investments.

29. This reality imposes a different, more dynamic approach in which the aim of policy is not to invest according to where past rates of return have been observed to be "sufficient", but to invest according where there is a high probability of raising future rates of return of investments that serve economic and social goals [17]. This suggests a rather different approach towards framing policies for financing VET over the lifetime:

- identify the factors that "drive" internal rates of return, factors that lower economic costs, raise economic benefits, and reduce the cost of capital;

- evaluate the extent to which those different "drivers" are susceptible to being influence by policy, and develop policy that works on those factors that are the most important determinants of internal rates of return.

30. Table 1 examines the relative importance of the components of benefits and costs for which data were collected. Because it covers only those elements that were considered *a priori* to be relevant, the analysis cannot pretend to be a comprehensive analysis of all factors that drive internal rates of return. But, even given the data as they are, there are a number of observations that seem noteworthy.

- When one compares the case in which individuals acquire a university qualification before entering the labour market, to the "lifelong learning" scenarios, it is readily apparent that foregone earnings becomes the most important factor driving returns. This explains why the private rates of return rise so much under the scenarios that reduce foregone earnings, either by shifting the cost away from individuals, or reducing the duration (and cost) to individuals.

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[17] The approach being undertaken here is to project returns under alternative scenarios that have the same policy objective (to increase adult participation in VET over the lifetime, e.g., but that vary

- That said, foregone earnings tend to be less important for women than for men, because women's earnings are, on average, lower than men's.

- When considering the case of persons acquiring an upper secondary education, foregone earnings are low relative the direct costs of such education. But it is instructive as well that the loss of transfer income tends to be a larger cost factor for these persons, probably because as lower qualifications levels are associated with higher risk of unemployment and economic dependency.

- It also is noteworthy that, in unpacking the factors driving fiscal returns, the benefits to governments of reduced dependency are appreciable; conversely, the potential loss of transfer income to individuals is a "risk" that cannot be ignored when considering how to strengthen the incentives for individuals to invest in VET during the lifetime and other forms of lifelong learning.

31. Taken together these findings have a number of implications for the development of policy for the finance of VET over the lifetime. The first is that it would appear that internal rates of return are highly sensitive to variations in a set of cost parameters that are susceptible to being influence by public policy and institutional arrangements. This does not mean that such policies and institutional arrangements are in place. But the analysis suggests that initiatives in this area have the potential for important payoffs. Future analyses that take account of a broader set of cost parameters as well as factors that affect the *benefits* from lifelong learning (such as the role of collective bargaining systems in linking qualifications to earnings), might identify still other areas for policy intervention.

32. The analysis outlined above also highlights the principal features of two distinct strategies for raising private and fiscal rates of return. One is to shift costs from one actor to another. The other strategy to raise rates of return is to reduce costs absolutely. An example of the first would be when the State intervenes to provide learning opportunities free of charge.

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policy and institutional arrangements for meeting that objective to find the most efficient one.

While this effectively lowers the return to the public purse, it raises the return to individuals. But such cost shift strategies should not be dismissed as "zero-sum games". A reduction in direct costs for a low income individual can have a powerful impact on the internal rate of return that he or she realises from such an investment. Moreover, though the analysis does not allow one to estimates returns to employers when they cover salaries of individuals in training, it does provide clearer boundaries for discussion about what constitutes a mutually advantageous sharing of costs under what is still a "zero-sum game".

33. For the second strategy, overall costs might be reduced through techniques that increase the efficiency of the learning process, through more individualised and self-paced instruction or more narrow targeting of desired learning outcomes, for example. However, as such approaches entail developmental costs themselves, the ultimate impact on the unit cost associated with a particular outcome are indeterminate. It is for this reason that the analysis undertaken by the OECD confines itself to a simpler, but still familiar basis for lower cost learning: reducing duration on the basis of granting academic credit for prior learning, through *assessment of prior learning* (APL) (see Bjørnåvold 2002, Duvekot 2002). For example, in the case of adults with less than an upper secondary education who would like to acquire a university qualification, APL can spare them the obligation of first completing upper secondary education if there experience is judged to have been of educational value. The Norwegian authorities have used this form of APL to grant adults, who never completed upper secondary education, entry to university studies (OECD 2002b). For individuals who have been accepted into a programme of study, APL also can be used to shorten the duration of learning activities by allowing adults to receive academic credit for work experience, thus obviating the need to pursue certain studies that would be required for less experienced individuals. This is the sense in which APL is used in the analysis. For the purpose of the analysis, it has been assumed that adults with approximately 20 years of experience can get academic credit equivalent to half the studies that they intend to pursue to acquire the next higher level of qualification. Whether that figure appropriate is debatable; though APL has been used for years, there is little evidence on the number of adults who have benefited from it, or the number of credits they have received on

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This approach is summarised in Wurzburg (1998); also see OECD (2000b) and OECD (2001a).

the basis of it. However, roughly 1 ½ - 2 years of academic credit for 20 years of work does not too seem unreasonable as an assumption -- or alternatively as a target for policy. [18]

Concluding comments on the incentives to invest in lifelong learning

34. For all its limitations, the analysis of internal rates of return to lifelong learning is instructive for demonstrating that the incentives facing individuals as well as public authorities to invest in lifelong learning are highly dependent on the institutional and policy context within which such investments are made. Thus policy and institutional arrangements probably do matter for making lifelong learning a sustainable and beneficial undertaking.

35. Specific conclusions of immediate policy relevance are more difficult to draw because the data are not current, and the analysis rests heavily on un-tested assumptions about the timing and scale of earnings gains after lifelong learning and possible reductions in the duration of education. However the results do point to issues that merit further attention:

- poorly qualified persons face weaker economic incentives than more qualified persons;
- women often face stronger incentives than men;
- duration of lifelong learning activities is likely to be a powerful, if not decisive factor in determining the returns to such investment.

36. But even if policy makers succeed in strengthening the incentives to invest in lifelong learning, there still is the question of whether the two critical actors -- employers and individuals -- will have the *financial means* to act on those incentives. The following section

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[18] The Advanced Placement Program, first started in the United States is one example robust system, first established in 1955, for awarding higher education credit to students in high school for academic work undertaken within the framework of an advanced placement curriculum. In 2001 820,880 students took AP Exams in the U.S. (this represents about 1/5 of all persons successfully completing upper secondary education), 1,414,387 AP Exams were administered worldwide. More than 1,400 institutions in the U.S. grant a full year's credit (sophomore standing) to students presenting satisfactory grades on a stated number of AP Exams. This represents not just the chance to save on college tuition and graduate early from college but also frees up time in a student's college schedule, allowing a student to take more advanced courses, to double major, or to explore additional disciplines and opportunities. See http://apcentral.collegeboard.com

sketches out the nature of the problem that needs to be addressed and examines in some detail selected remedies that have been undertaken in several countries.

Aligning finance mechanisms with the economics of investing in VET

37. Strong economic incentives to invest in education and training are no guarantee that efficient and equitable levels of such investment will be forthcoming. If there are inadequate means for private actors to capture the benefits (i.e., if externalities to learning are present), incentives for private investment are weakened and net new investment will depend heavily on what public authorities can do. But if there are limits on public spending, much of the financing burden will fall on private actors. Even where private returns are substantial (as is the case with much of higher education when is it undertaken as part of initial education; see, e.g. Wagner et al, 2000; Harmon et al, 2000), investment on the part of individuals may be constrained by a lack of private savings and prohibitive cost of capital for loans. Governments intervene to relax these constraints through grants as well as schemes that effectively reduce the rate of interest that individuals have to pay (through loan subsidy schemes) and/or reduce the risk of such investment by reducing the financial liability when the economic returns are too low (such as in the higher education contribution scheme in Australia).

38. In the case of VET over the lifetime, the situation is more complicated. This partly is because of its relative novelty of the concept, the absence of well-developed institutional arrangements and individual expectations regarding the idea of human resource development spread over the lifetime. The fact that the reality of lifelong learning and VET over the lifetime has not caught up with the rhetoric means that there is a paucity of data capturing experience in settings and circumstances that approximate the commonly held "visions" (and frequently that is the only guide to what the practical ramifications might be) of lifelong learning and VET over the lifetime. It would appear that, within the context of institutional arrangements and policy (of a front-end loaded education model) that have prevailed in the recent past, the analyses attempting to estimate returns to various forms of VET over the lifetime have generated results that broadly support further investment, but are hampered by limits on their robustness and

general applicability (Cohn and Addison 1998). Even if it could be demonstrated unequivocally that the introduction of the kinds of policy and institutional arrangements implicit in the scenarios tested in the preceding section succeed in raising private and/or fiscal returns enough to justify investment in VET over the lifetime, there may be under-investment if various would-be investors face liquidity constraints. In other words, while high levels of expected returns are a necessary condition for further investment, it is not sufficient: there is a need for financial resources, and those resources need to be available at a manageable cost. Some of the factors that might make the cost of capital prohibitively expensive include high interest rates on unsecured loans for cost of living expenses, reliance on after-tax savings, or foregone returns on alternative investments.

39. Public authorities from OECD Member countries debated the issue of how to address this financing problem during the international conference "lifelong learning as an affordable investment" (December 2000, in Ottawa, Canada) (see OECD 2001a, pp. 153-166.). Subsequently OECD Education ministers asked the Secretariat to undertake work to document recent innovations in this area.. The rest of this section considers the broad categories of finance mechanisms that have been witnessed in the past several years, and considers some of the initiatives currently are being tried.

Overview of past approaches

40. The essential financing problems that were identified under *recurrent education* in the 1970s, have persisted over the years as the concepts of lifelong learning and, in particular, VET over the lifetime, have emerged and taken form: how to permit adults to stop gainful employment while learning. Although recurrent education was first posed as a *right* of individuals in 1969 (see Papadopoulos (1995), pp. 112-116.), it never emerged as an enduring wide-spread practice. Without going into a full assessment as to why, it is worth noting that the (evidently) more enduring notions of lifelong learning and VET over the lifetime have emerged against the backdrop of the reality of emerging "training markets". This "training market paradigm" was helped along by the belief that, in comparison to children in initial education, there was a high degree of heterogeneity in the learning objectives of individual adults; that, such needs could be met only through a more highly differentiated arrangement of providers (not through the same models of policy planning and delivery that characterise the initial

education and training system). It also was abetted by the perception that the changes sweeping economies and enterprising had powerful consequences for qualifications requirements, and that investment in learning to meet such requirements would generate substantial private returns. The "training market paradigm" provided a framework for the search for means to ensure a sustainable level of investment in learning (OECD 1993, pp. 97 - 103.).

41. Operating (sometimes explicitly, sometimes implicitly) within the framework of the training market paradigm, public authorities put in place during the 1970s and early 1980s a variety of measures that aimed principally to increase the *supply* of and the *demand* for learning activity. Increases in supply were accomplished through "revenue-generating" levies that raised money through payroll taxes imposed by governments or through collective agreements. These resources funded the establishment of new or the expansion of existing training organisations that typically were governed by social partners. Demand for learning activity was increased through two general approaches, a "levy exemption scheme" (Gasskov 1998) that was imposed on employers, and vouchers (West et al 2000) that were given to individuals. The "levy exemption scheme", typified by the oft-copied French law of 1971, imposes a tax on enterprises equal to a fixed percent of the payroll (originally set at 1.1 percent of gross payroll in the case of France, it now is 1.5 percent of gross payroll), but which is reduced by the amount that enterprises spend on allowable training activities. The rationale behind such "train-or-pay" schemes was that, in addition to securing revenues from non-training firms that helped finance training supply, the tax increased the demand for training by enterprises by effectively reducing to zero the cost of training up to the amount of the tax liability. Vouchers for further learning have been tried in several countries as a strategy for raising individuals' demand for learning activity by reducing the effective cost of training by financing direct and, in some cases indirect costs of training (such as cost-of-living); they also are intended to enhance the power of individuals to exercise choice in education and training markets. Voucher schemes vary with respect to their criteria for targeting, the types of costs they are permitted to cover, the sums involved, and administrative arrangements.

42. Against the background of experience with different schemes that have been or could be adapted to financing lifelong learning and VET over the lifetime, one can question whether new measures are needed. The answer depends in part on what one concludes about: i) the adequacy of the aggregate level of expenditure under the various measures in place; and ii) their

adequacy in serving collateral policy goals such as equitable access to learning opportunities and efficiency in the provision of education and training.

43. The first of these core issues is impossible to answer purely on the basis of empirical analysis. Even if one could measure all the resources that presently go into lifelong learning and related activity, there is too little understanding of how such activity contributes to economic performance or general public welfare, or what level spending is optimal. In the absence of a neat analytical base, there is a political consensus that "[f]unding is…a key issue. Improving the efficiency and effectiveness of the present system…is one response. Increased funding is the other response." (OECD 2001b, p. 3).

44. There is a strong empirical basis for addressing at least one element of the second of these core issues, namely the degree to which participation in learning activities is equitably distributed. As noted earlier, persons with low levels of qualifications are far less likely to participate in learning activities than more qualified persons. There also is evidence that small- and medium-size enterprises are far less likely to invest in learning activities than larger one. Whether this patterns of participation is linked to demand-driven factors (such as low internal rates of return) or supply-driven factors (inappropriate opportunities on offer), the outcome is the same: prevailing policy and practice regarding adult education and training do not compensate for inequities in initial education and training. As for question of the efficiency of learning opportunities, the message from OECD Education Ministers referred to above suggests that it is a priority. But the evidence on this issue remains as limited now as it was in the early 1990s when the authors of a comparative review of industry training policy noted:

"One of the most striking observations to be made about the provision of Further Education and Training is he widespread lack of attention given to how provision might be improved, made more cost-effective and more efficient. In effect, the "FET production function", the way in which various *inputs* to the process of further education and training (the teaching and learning methods involved, the nature of the technology involved, the time required) is related to the *outputs* of the FET (improved levels of proficiency) remain largely unexamined." (OECD 1993, p. 101.).

45. In short, it is fair to conclude that financing arrangements that were in place at the end of the 1990s (some with more than 30 years of experience behind them) are inadequate[19]. OECD Education Ministers were quite explicit when they invited to the OECD to "identify and evaluate innovative policy options for financing lifelong learning" (OECD 2001b, p.5).

Strategies for co-financing lifelong learning

46. In the late 1990s and the first years of the twenty-first century, policy discussions of strategies for co-financing lifelong learning have been shaped by convergence in certain views:

- Public authorities alone could not provide the necessary financial resources VET over the lifetime;
- As lifelong learning generates considerable private return, employers and employees should finance at least some of it;
- Greater reliance on market forces could strengthen the incentives both for learners to seek more efficient learning options, and for providers to achieve higher levels of efficiency.

47. But perhaps the most important shift in thinking turned around the role that financing mechanisms play in the learning behaviour of individuals. In the face of the very low levels of participation of poorly qualified persons in lifelong learning, even in situations in which learning was available at little or no cost, the question arose as to whether it was sufficient to "relax liquidity constraints". In short there were doubts as to whether the evident lack of motivation was attributable solely to weak economic incentives. The harshest critique was that straight-forward income transfers (whether in the form of grants and allowances or entitlement to tuition-free study, e.g.) diminished individual "ownership", and, in so doing, robbed individuals of the responsibility for their own development. There was a related school of thought that argued that economic self-sufficiency depended not just on income support (of the kind that might relax liquidity constraints, but on *asset accumulation*. It argues that changing

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[19] In the International Conference "Lifelong Learning as an Affordable Investment", there was a high level of interest in pursuing approaches that stimulate greater private sector investment, and would improve efficiency of provision and equity of access (OECD 2001a, pp. 160 - 163.).

investment behaviour (learning behaviour) on the part of low income (poorly qualified) persons required an asset base, a vested interest to start with.[20]

48. Against this background of concern over the adequacy of past approaches to financing VET over the lifetime and other forms of lifelong learning, public authorities, social partners and non-governmental organisations began to search in earnest for alternatives. The 2000 international conference on "making lifelong learning an affordable investment" was just one of a number of initiatives that were organised as part of that search. In that meeting, many of the discussions were dominated by the topic of "individual learning accounts" and the more generic issue of *co-finance* of lifelong learning -- principally by individuals, governments, and employers. While various forms of "co-finance mechanisms" showed promise, there was a lack of information on the details of different approaches that were being tried and evidence on the outcomes of different approaches. Participants in the conference stressed the importance of filling these gaps in knowledge; OECD education ministers echoed this message when they met in Paris a few months later. In early 2002, the OECD, in co-operation with the European Learning Account Project[21] undertook work to help close that gap. The first phase of that work, which will be finished around the end of 2002, is intended to produce a more detailed description of the different approaches to co-financing presently being tried. It also is intended to present evidence on the outcomes of these initiatives, where there is sufficient experience.

49. The discussion below describes some of the initiatives and overall patterns that are evident from work to date. The core feature of the initiatives being examined is that they involve co-financing by individuals and at least one other party. Within that general model there are important variations. Perhaps the most important is the purpose that the account is intended to serve.

Purpose and scale of mechanisms

50. Most of the initiatives in place are intended to cover the *direct costs* of learning activities. Typically this includes fees and materials. Because these initiatives cover direct costs

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[20] See Michael Sherraden (2001), R. Friedman and R. Boshara (2000), and R. Boshara (2001).

[21] The European Learning Account Project was set up in 1999 with the support of the United Kingdom Department for Education and Skills and subsequently by the National Learning and Skills Council of England. For further details see Cheesman, (2002).

only, the scale of total contributions is relatively limited, though there is considerable range across initiatives with respect to the sums involved (see Table 1). It should be noted that the Canadian scheme differs from the others insofar as it covers education and training as well as other individual development activities, including setting up a small businesses.

51. There are fewer cases of initiatives that are intended to replace income for individuals who pursue full-time learning activities (see Table 2). Two such initiatives are found in Sweden, one operated by an insurance company, the other recently developed by the government. Both are of bigger scale than the other schemes into respects, insofar as the annual sums paid are greater and the schemes are more or less permanent, thus allowing a long-term time horizon for savings. The government scheme is, in fact, more modest in scale than originally proposed (by roughly half). Importantly, however, it allows individuals to set aside income *before* taxes; direct expenses are never taxed; when the funds are used to replace income, they are taxed as ordinary income -- however at a lower rate if the benefits taken during learning activities represent a lower income than from full-time employment. The scheme organised by Skandia involves larger sums. Here to the sums that are set aside are *before* taxes.

Motivational impacts

52. Estimating the impact of co-finance mechanisms on the propensity of individuals to invest in learning is made difficult by the facts that most of the initiatives in place are relatively recent, and that truly robust assessments require experimental design, including random assignment of individuals to experimental and control groups. However, presently there are fragments of evidence that permit one to draw *some* inferences. In the medium term (1 or 2 years) there will be available more evidence on participation rates in initiatives, levels of savings, and participation in learning activities. In the longer term 3 to 5 years, there will be more definitive data on impacts of the Canadian Learn$ave programme.

53. Among cases in which there is readily available evidence (see OECD 2001a, pp. 160 - 163), there is one Learning Account Scheme that was established in Gloucestershire England in the mid-1990s. Under the scheme a local training authority effectively matched contributions by individuals to a training account that was managed by a local bank, when individuals spent money on *bonafide* training expenses. Although there was no control group, the scheme did succeed in reaching persons who, as a group, participated comparatively less in training, and

those persons did invest in training. In the Netherlands, eight co-finance were established under a pilot programme that varied the administrative arrangements, the sectors of economic activity involved, the precise formula for matching individual contributions, and the role of training bodies. It was intended that the schemes would serve poorly qualified individuals. On balance, initial results suggest that the schemes have been successful in reaching the target population, and that individuals that, as a group, were more at risk, did in fact pursue studies.

54. The private scheme established by Skandia, a Swedish insurance company, evidently has been sufficiently successful to be marketed as a commercial product. But at another level, the evolution of the "competence assurance" model within Skandia offered insights into the motivational impact of such an approach. When Skandia first introduced the scheme, it was found that poorly qualified persons were only about a third as likely to participate as employees as a whole. When the company increased the company contribution from a 1:1 match to a 3:1 match, participation among poorly qualified and lower paid employees more than doubled and their rate is now close to the overall rate of employees.

55. There is a considerable amount of evidence on effects of related strategies that aim to increase the asset base of low-income (typically poorly qualified) persons, for purposes broader than just learning activities (one common objective is to increase home ownership; another is to permit individuals to set up small companies) (see Scanlon et al, 2001). This evidence, mostly from the U.S., suggests that such schemes have positive impacts on economic self-sufficiency, self esteem, credit-worthiness, and savings behaviour, as well as the likelihood of establishing educational plans.

Administration and support

56. The essential difference between *co-finance* mechanisms and other forms of finance mechanisms is in the interactive role played by individuals. Indeed, the logic behind co-finance mechanisms is that if individuals are play an active role in financing investments in themselves, they will play an active role in deciding to invest and choosing how to invest. The implication is that the net financial value of support is not the only consideration; it is important to consider the degree to which individuals are "empowered" to play an active role in investing in their own development, and that depends on the details of the institutional arrangements.

57. Practically speaking a prevalent characteristic of co-finance mechanisms is the presence of a third party to join the individual and the education/training agent. Sometimes that third party has been quite literally distinct, as in the case of a bank or financial institution (examples include one of the pilot projects in the Netherlands and the project that was run in Gloucestershire, England.). Frequently it has been in the form of an existing education /training authority assuming a separate role of literally managing a form of learning account (another pilot in the Netherlands, a project in the Basque Country in Spain). Sometimes the schemes involve direct payments from accounts to education/training institutions chosen by an individual. Another approach (as in the of Individual Learning Accounts in the U.K., e.g.), has been for the government to offer a virtual match to individual payments while also giving individuals access to courses offered at discount.

58. Accountability is an issue that arises as one moves away from single-party financing to co-financing. It is an issue that has been more complicated by pressure to put large innovations into place quickly. Where direct contributions have been involved, the most common approach to preserve accountability has been for the co-financing partner to match individual contributions at the time of a transaction to purchase education or training services. This has minimised the risk that either individual or co-finance partners' funds are spent on activities that are not allowable. In the case of the private sector scheme in Skandia, there was concern that investment decisions should be mutually agreed to by employers and employees when both pay; but there was recognition as well that such agreement might not always be possible. The remedy has been to establish separate employer and employee funds.

59. In addressing the issue of accountability, however, there has also been concern about ensuring that co-finance systems were sufficiently "user-friendly", especially insofar as such schemes were aiming to reach persons who do not typically participate in learning activities. This concern has been met through the use of telephone "help-lines" (the United Kingdom), that also can include support in drawing up development plans. Skandia provides support through on-line information about courses and support in preparing CVs. The initiative in the Basque country is setting up a system of designated support workers.

Unanswered questions

60. It remains to be seen whether the various new mechanisms for co-financing lifelong learning are sufficiently user-friendly, well-funded, and mutually beneficial to make a difference in the willingness of individuals to invest in learning, and in the quality of the outcomes of such activities. A careful examination of on-going experience should provide some insights. At this point though, there appears to be a significant level of interest in relying on finance mechanisms that spread responsibility between individuals and others.

Conclusions

61. If strategies for the financing of VET over the lifetime are to be successful, three conditions need to met.

- Investment in VET over the lifetime should be economically sustainable;
- Investments should be financially feasible;
- Financing mechanisms need to be consistent with objectives for economic efficiency and social equity.

62. The first requires increasing economic benefits and reducing economic costs sufficiently to make such investments interesting. Although there are signs that this is occurring to some extent, it would appear that substantial improvement is needed, particularly with regard to the means for reducing the duration of VET over the lifetime. It is important to remember that there is little basis for estimating the importance of economic incentives relative to other incentives to invest in VET. That would suggest that reliance on economic considerations alone is not advisable.

63. Enhancing the financial feasibility of investment in VET over the lifetime depends on reducing the cost of capital for such investments. Co-financing mechanisms seem to be a promising approach insofar as they leverage individual contributions with contributions from public authorities and/or employers. Such leveraging is amplified in limited cases by allowing

that costs for such investment (including savings that are set aside) be deducted from taxable income.

64. To be successful, financing mechanisms ultimately need to be widely credible and accessible, including to persons who in the past, often have not participated in learning activities.

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Table 1. Co-finance of direct costs: contribution shares and total amounts

Initiative	*Individual contribution*	*Employer contribution*	*Public contribution*	*Total Amounts*
Basque Country	25 %		75 %	open ended entitlement to academic credit
Canada Learn/$ave	25%		75%	1000 EUR
Netherlands Min. of Ed.	2.5 - 19.0 %	up to 50 %	50 - 71%	450 -900 EUR
Switzerland	in-kind (non-work hours)		100 %	500 EUR
U.K. Individual Learning Accounts	14%		86%	280 EUR

Table 2. Co-finance of indirect (a) and direct costs: contribution shares and total amounts

Initiative	*Individual contribution*	*Employer contribution*	*Public contribution*	*Total Amounts*

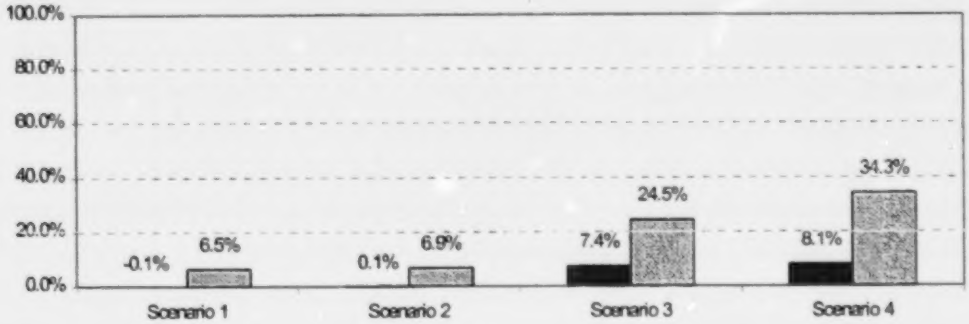
Skandia Insurance Company	50 %	50%		Up to 10 % of annual salary per year
Skandia - supplement (b)	25%	75%		Up to 20% of annual salary per year
Swedish Government.	50%	50%	First 1000 Euro tax deductible; premium of 100 Euro paid when used	2100 Euro before tax income per year

(a) including foregone earnings and associated costs

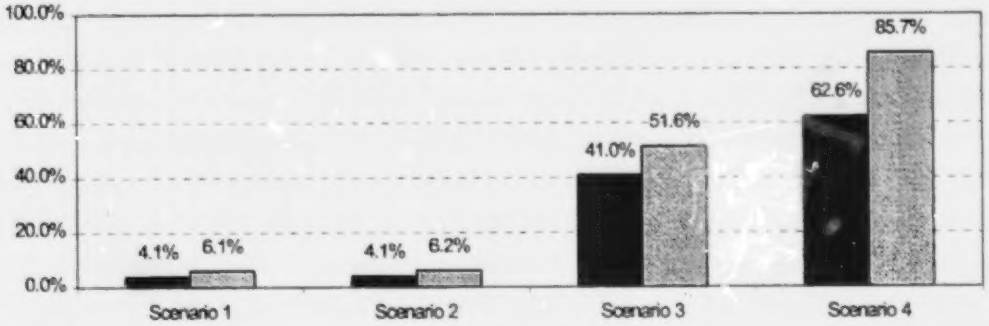
(b) for low-skilled and low-paid employees

Figure I.A Private Internal Rates of Return in the Case of Individuals Acquiring an Upper Secondary Qualification (a) Under Different Policy Scenarios, by Gender

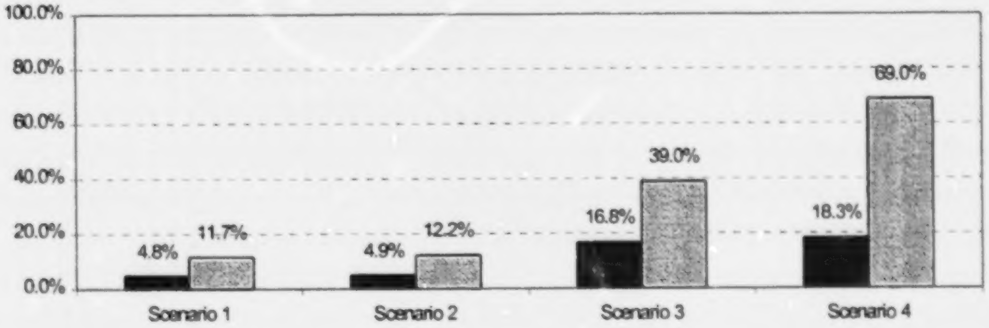
Canada

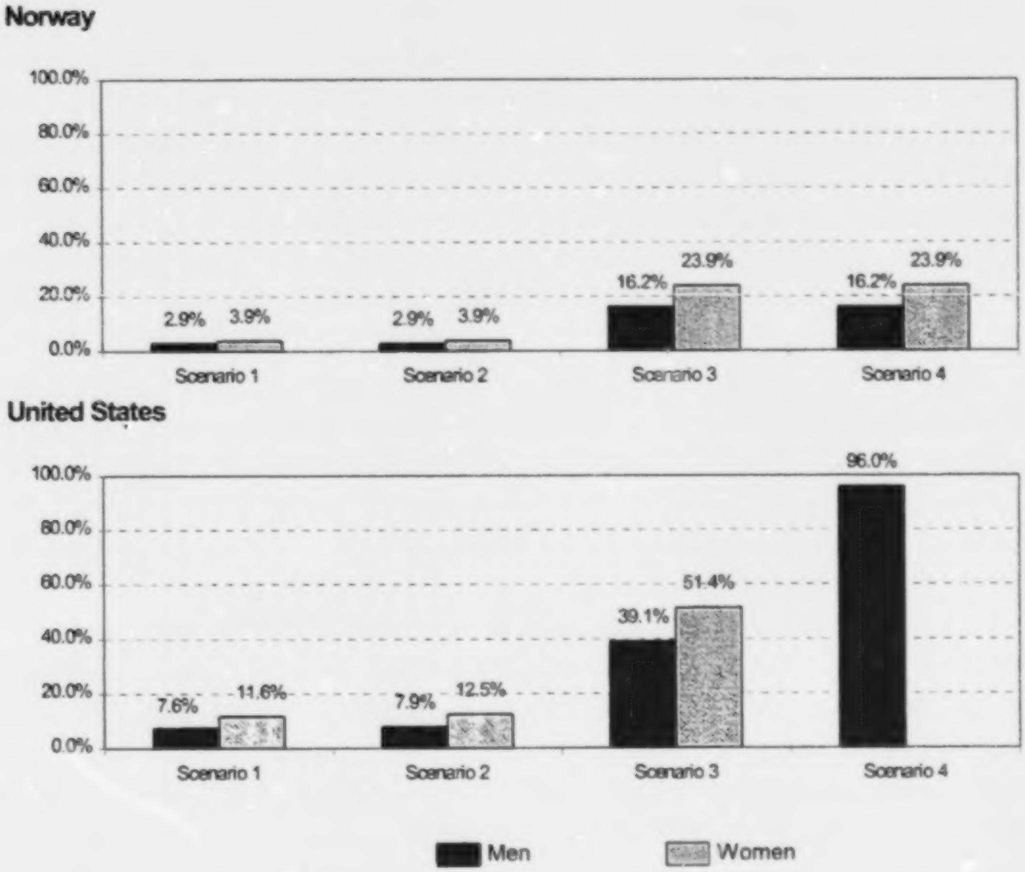


Denmark



France

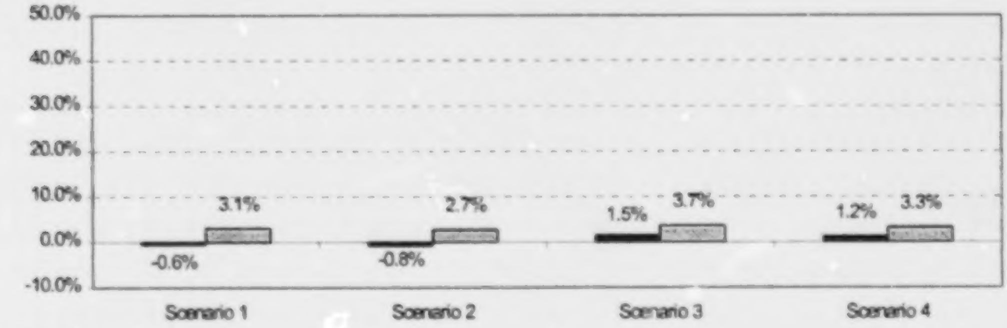




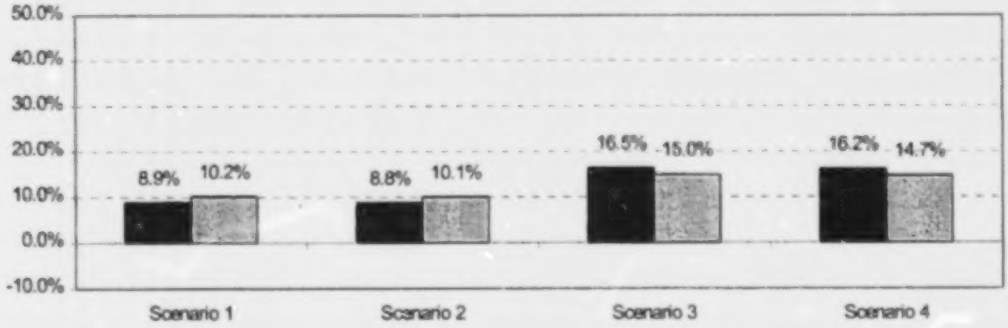
(a) Persons who completed lower secondary education and no more (corresponding to ISCED 2) before entering the labour market, and who at age 40, withdraw from the labour market to pursue full-time studies leading to an upper secondary qualification (corresponding to ISCED 3; typically requiring 2-3 years of study).

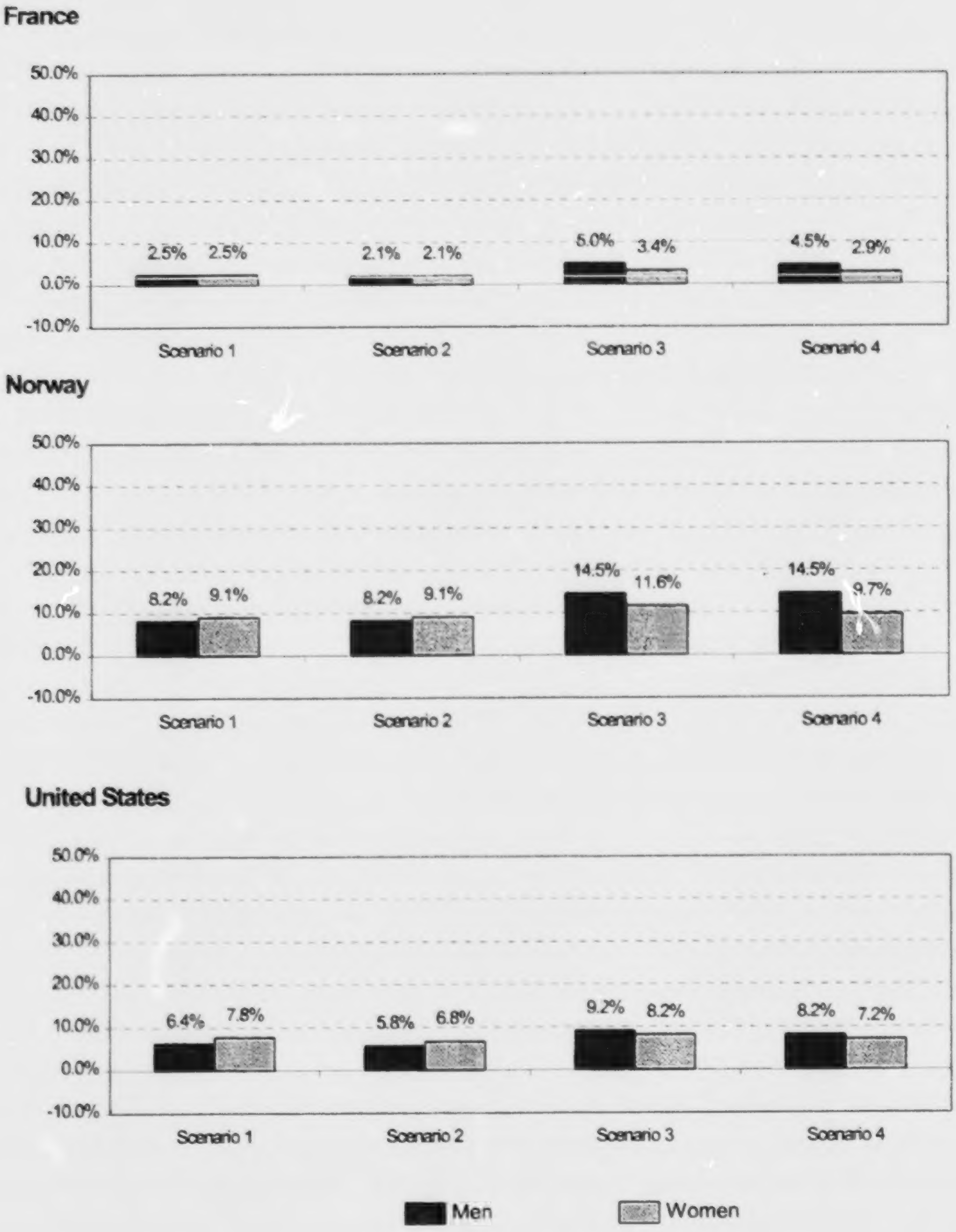
Figure I.B Fiscal Internal Rates of Return in the Case of Individuals Acquiring an Upper Secondary Qualification (a) Under Different Policy Scenarios, by Gender

Canada



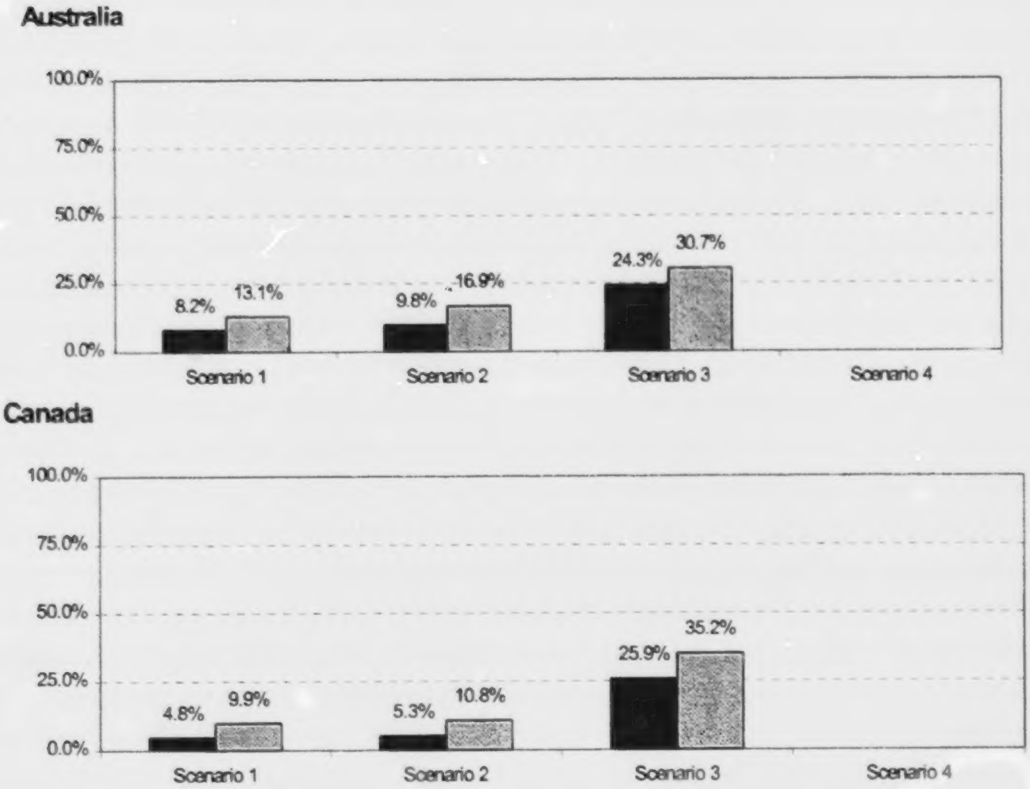
Denmark





(a) Persons who completed lower secondary education and no more (corresponding to ISCED 2) before entering the labour market, and who at age 40, withdraw from the labour market to pursue full-time studies leading to an upper secondary qualification (corresponding to ISCED 3; typically requiring 2-3 years of study).

Figure II.A Private Internal Rates of Return in the Case of Individuals Acquiring a University Qualification (a) Under Different Policy Scenarios, by Gender



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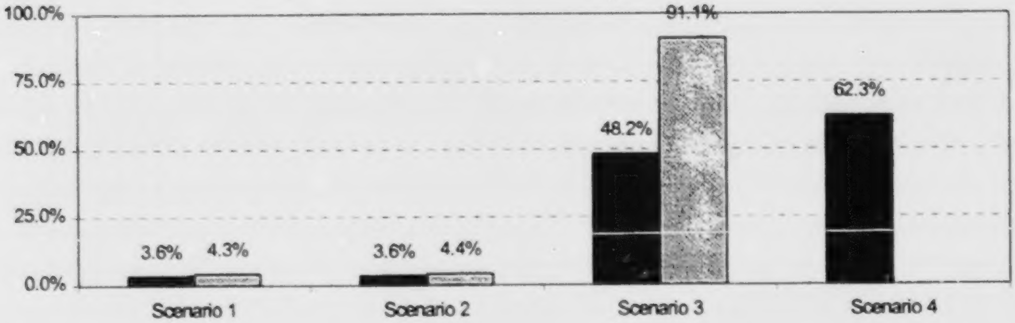

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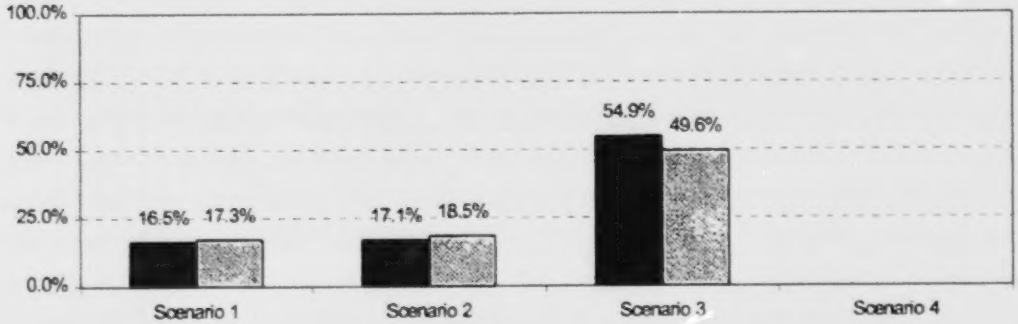
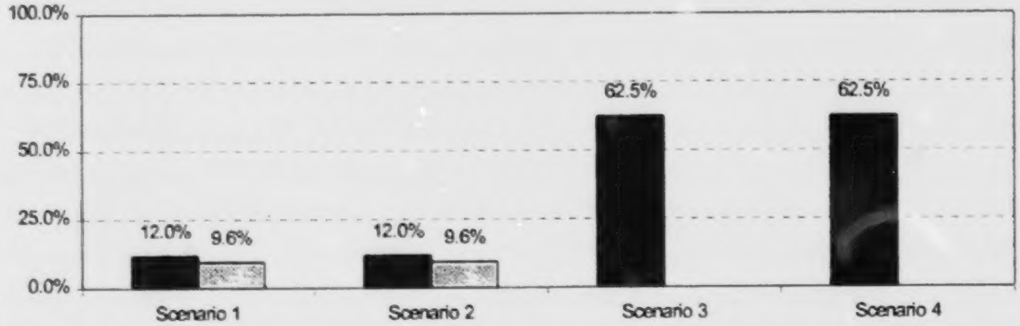
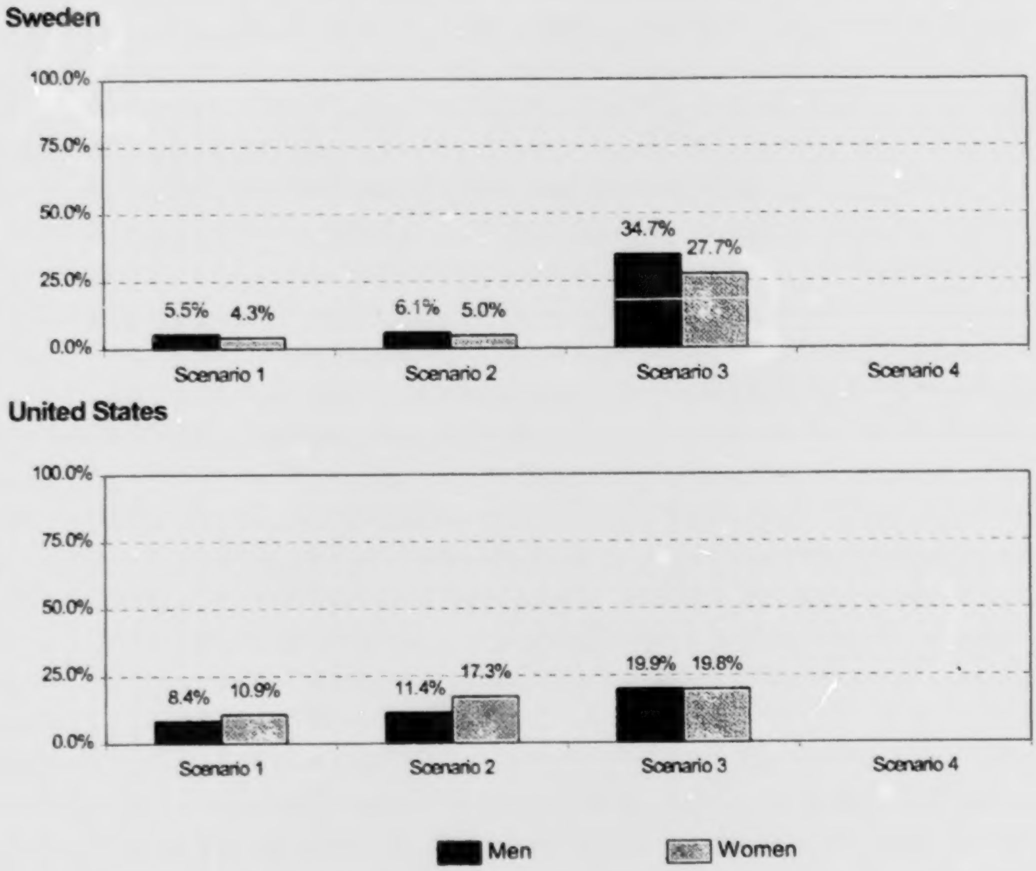


Norway

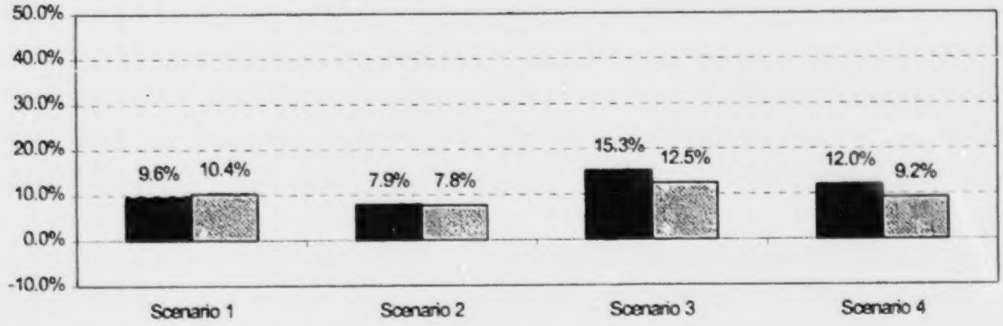




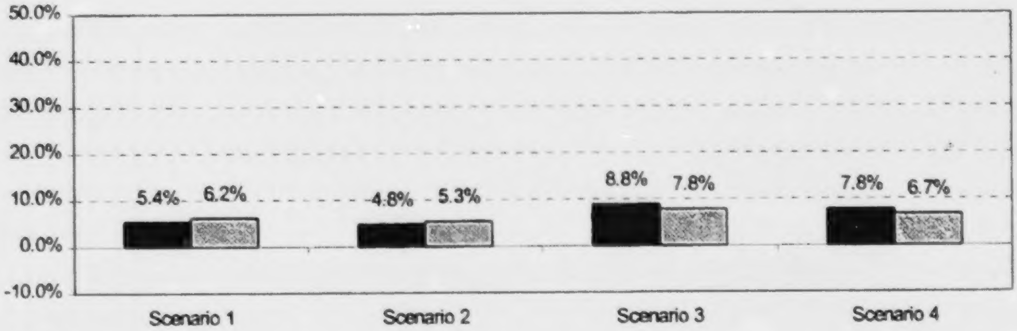
(a) Persons who completed upper secondary education and no more before entering the labour market, and who at age 40, withdraw from the labour market to pursue full-time studies leading to a university qualification (corresponding to ISCED 6; typically requiring 3-4 years of full-time study).

Figure II.B Fiscal Internal Rates of Return in the Case of Individuals Acquiring a University Qualification (a) Under Different Policy Scenarios, by Gender

Australia



Canada



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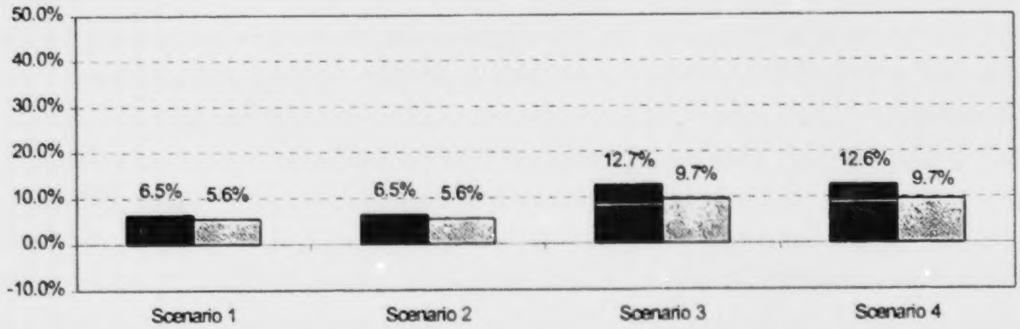
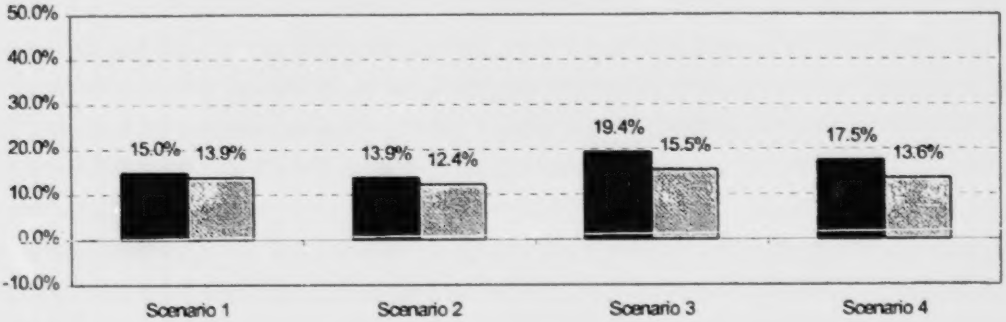
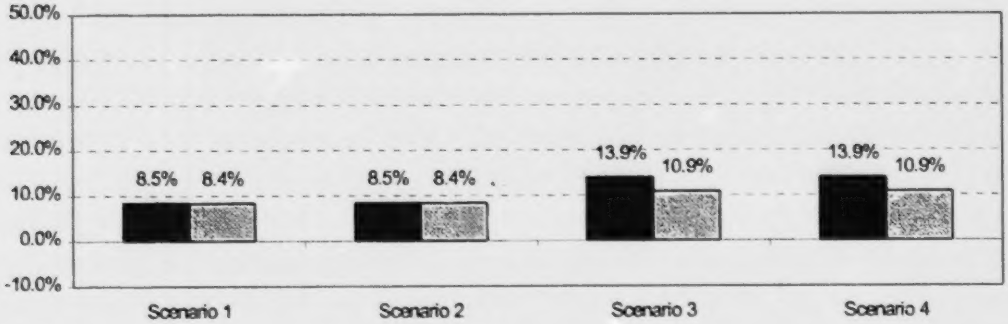
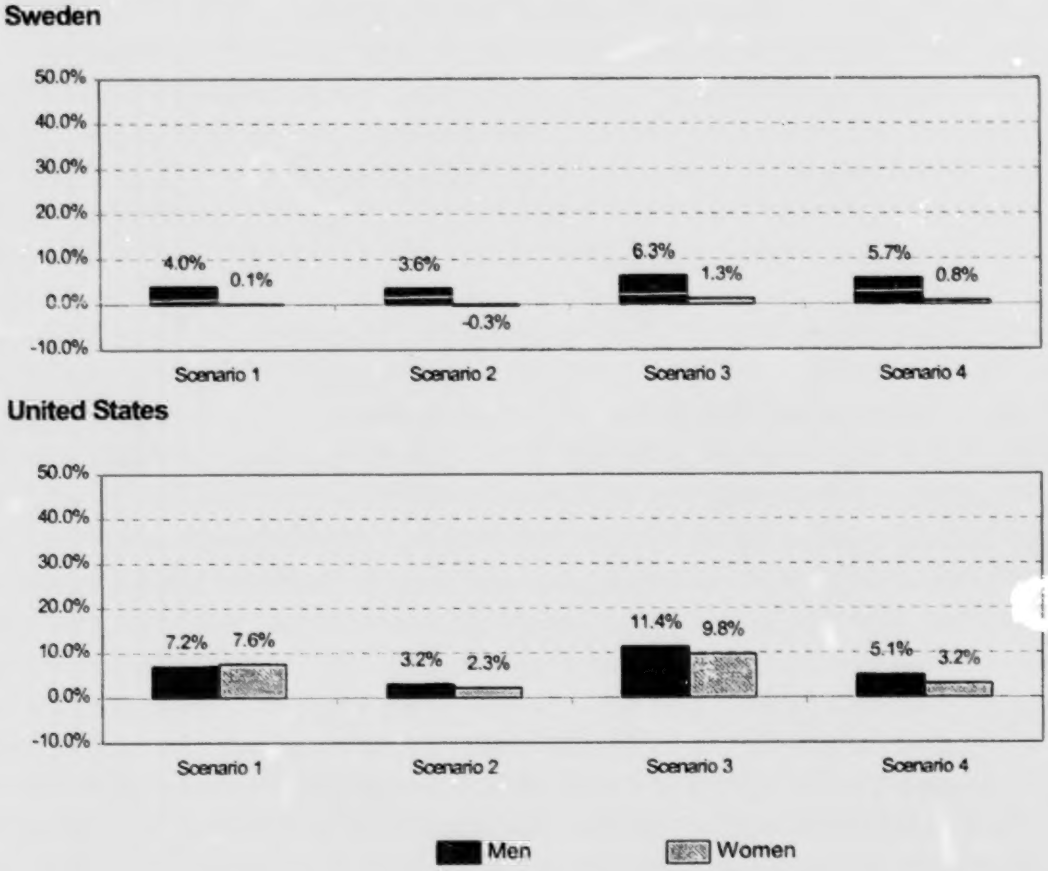


France



Norway

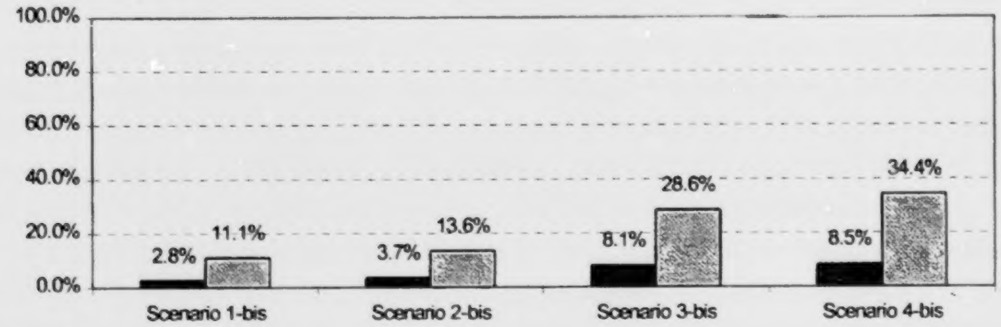




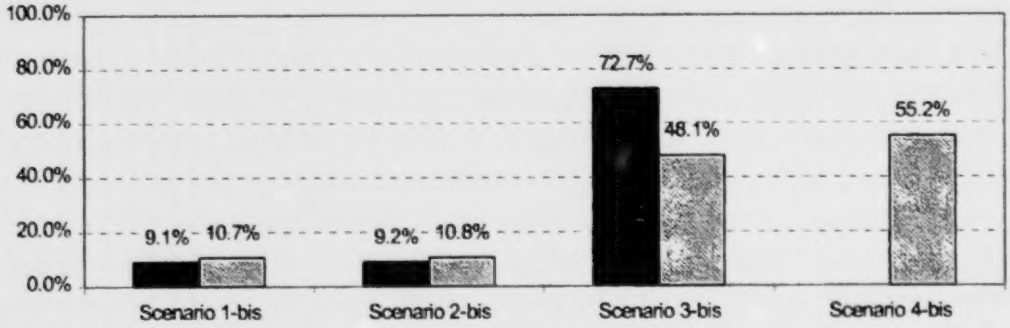
(a) Persons who completed upper secondary education and no more (corresponding to ISECD 3) before entering the labour market, and who at age 40, withdraw from the labour market to pursue full-time studies leading to a university qualification (corresponding to ISCED 6; typically requiring 3-4 years of full-time study).

Figure III.A Private Internal Rates of Return in the Case of Individuals Acquiring an Upper Secondary Qualification Under Different Policy Scenarios with Duration of Studies Reduced by Half, by Gender

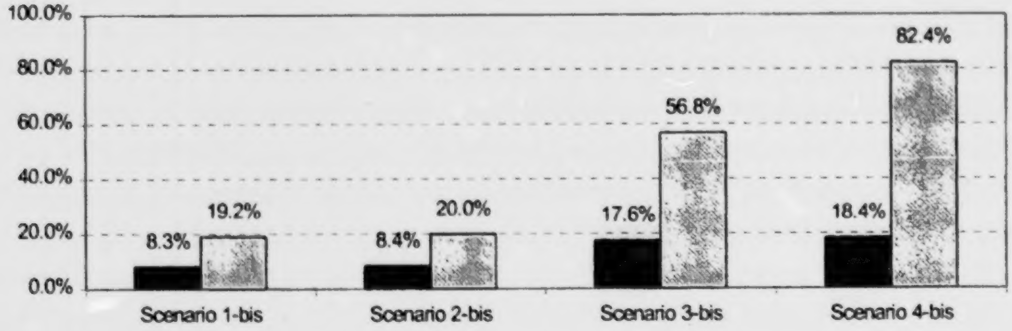
Canada



Denmark



France



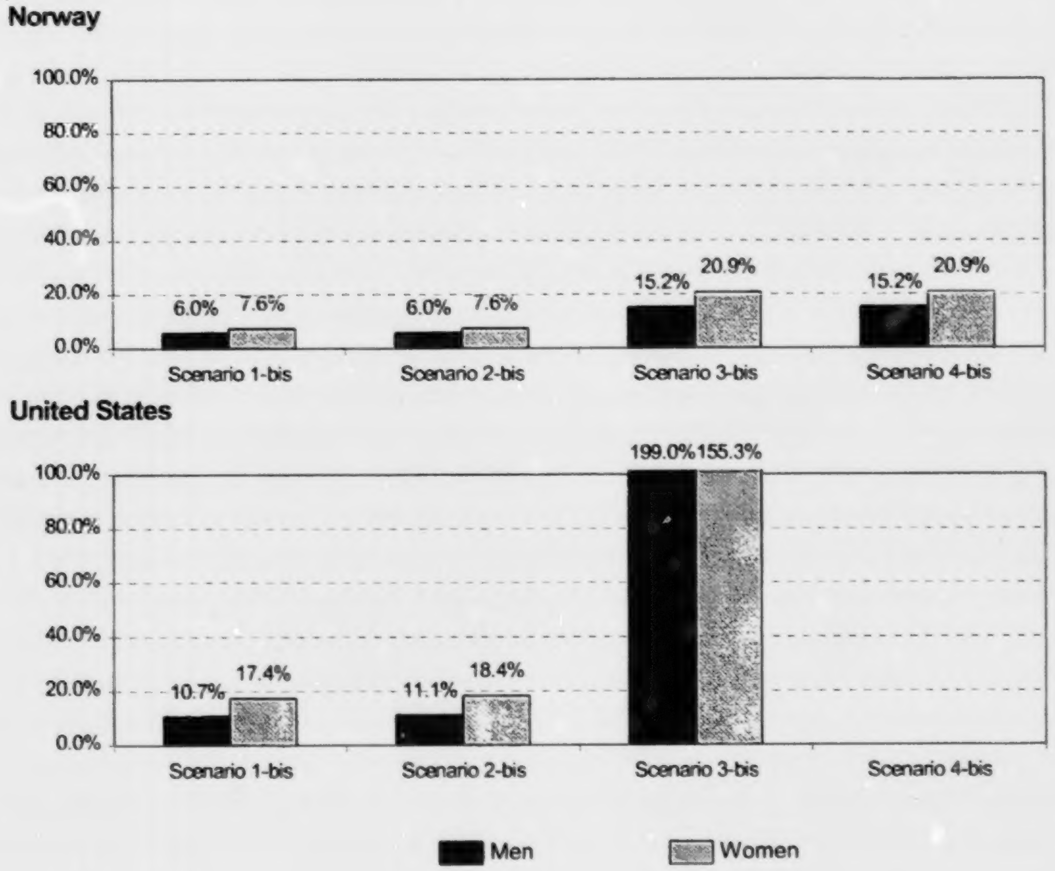
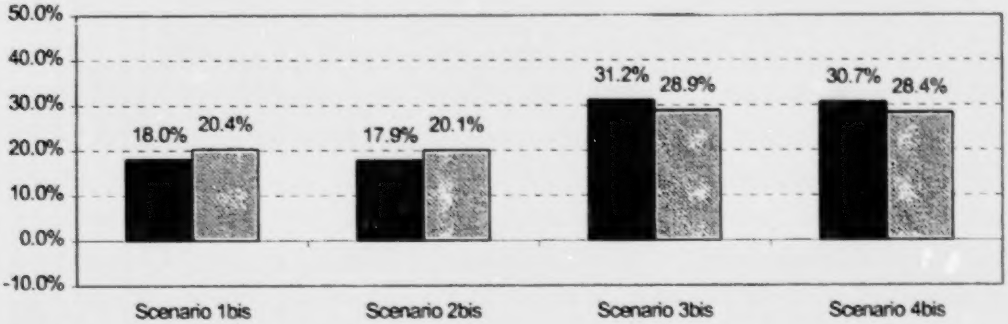
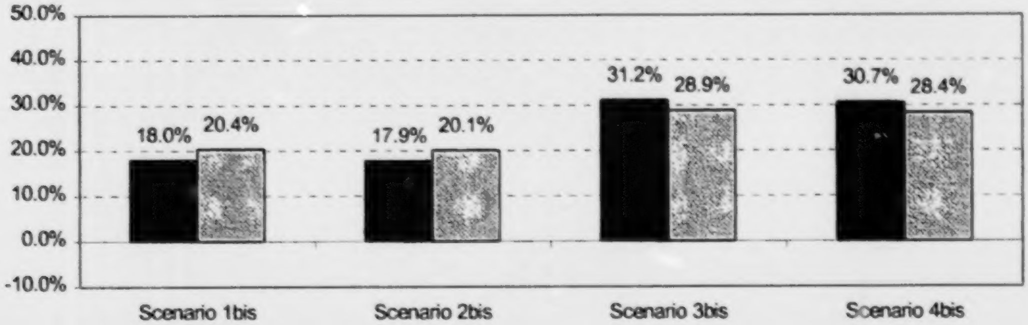

Norway
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
6.0%
7.6%
6.0%
7.6%
15.2%
20.9%
15.2%
20.9%
Scenario 1-bis
Scenario 2-bis
Scenario 3-bis
Scenario 4-bis
United States
199.0%
155.3%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
10.7%
17.4%
11.1%
18.4%
Scenario 1-bis
Scenario 2-bis
Scenario 3-bis
Scenario 4-bis
Men
Women

Figure III.B Fiscal Internal Rates of Return in the Case of Individuals Acquiring an Upper Secondary Qualification Under Different Policy Scenarios with Duration of Studies Reduced by Half, by Gender

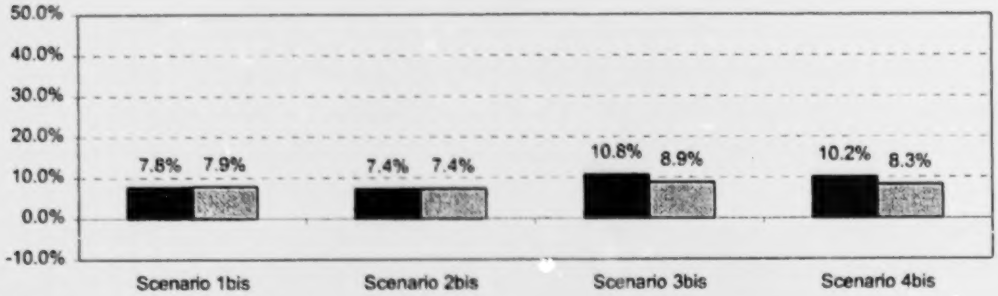
Canada



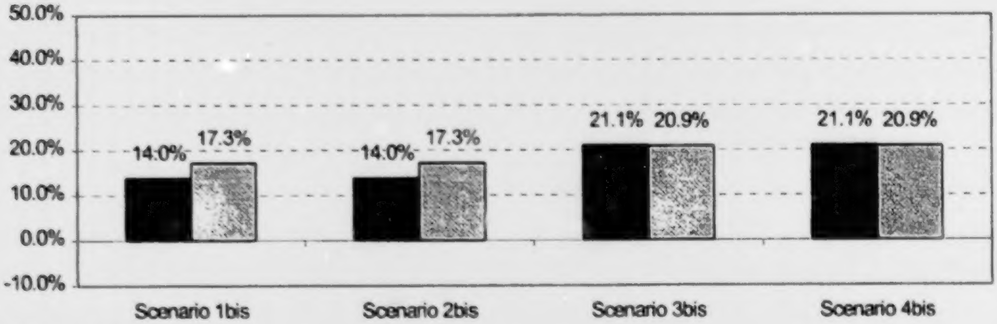
Denmark



France



Norway



United States

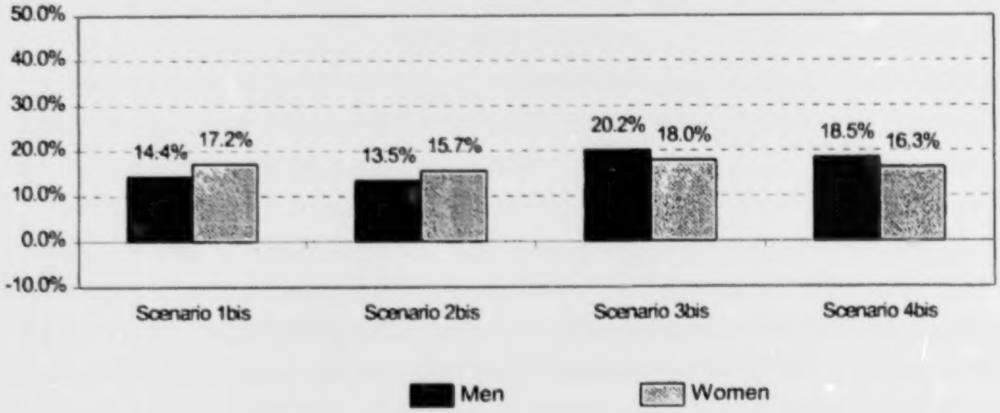
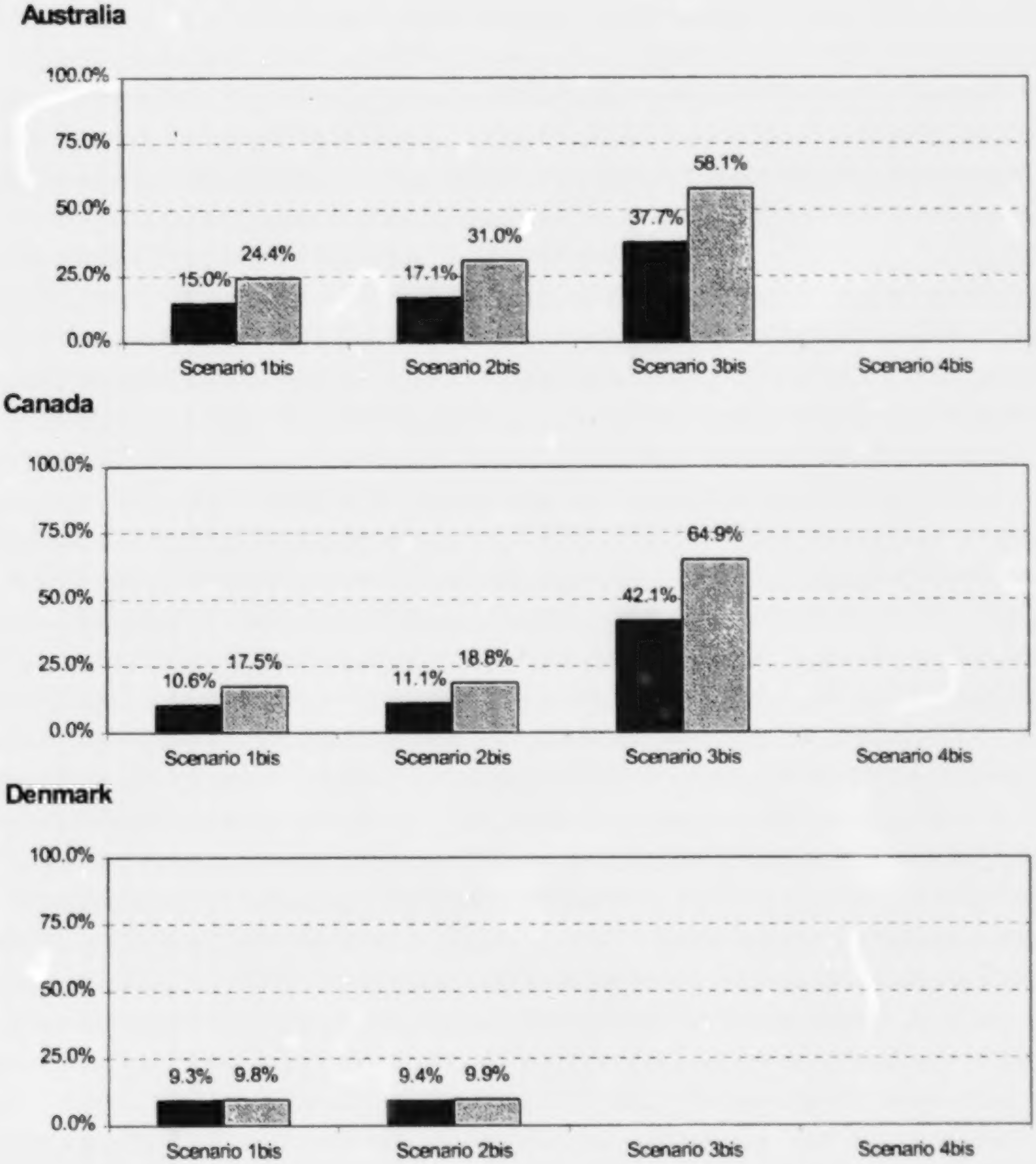
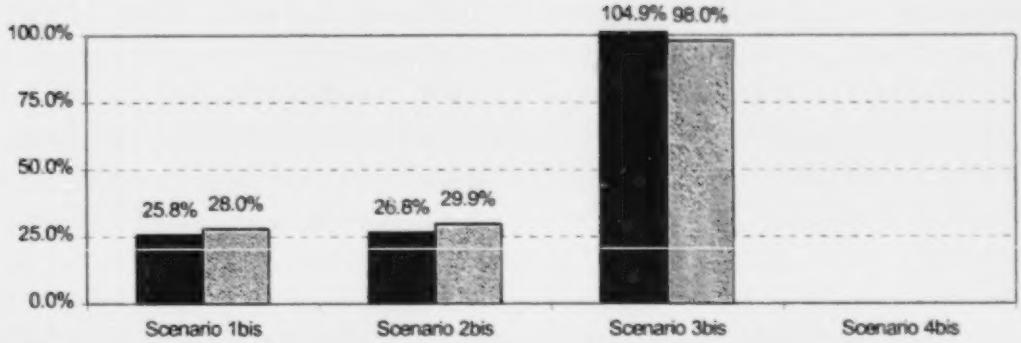


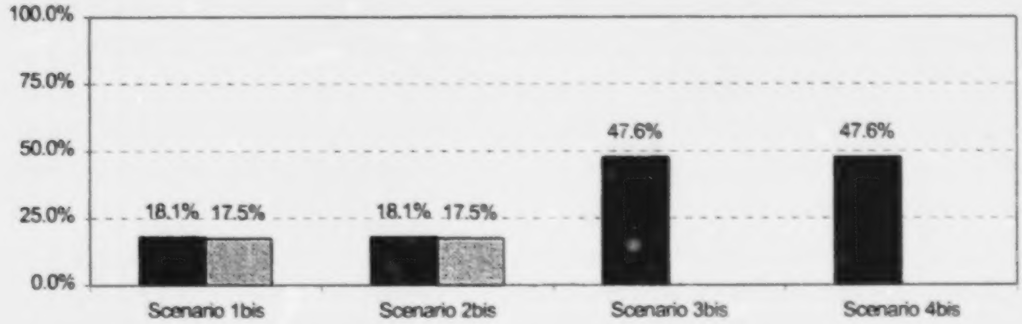
Figure IV.A Private Internal Rates of Return in the Case of Individuals Acquiring a University Qualification Under Different Policy Scenarios with Duration of Studies Reduced by Half, by Gender



France



Norway



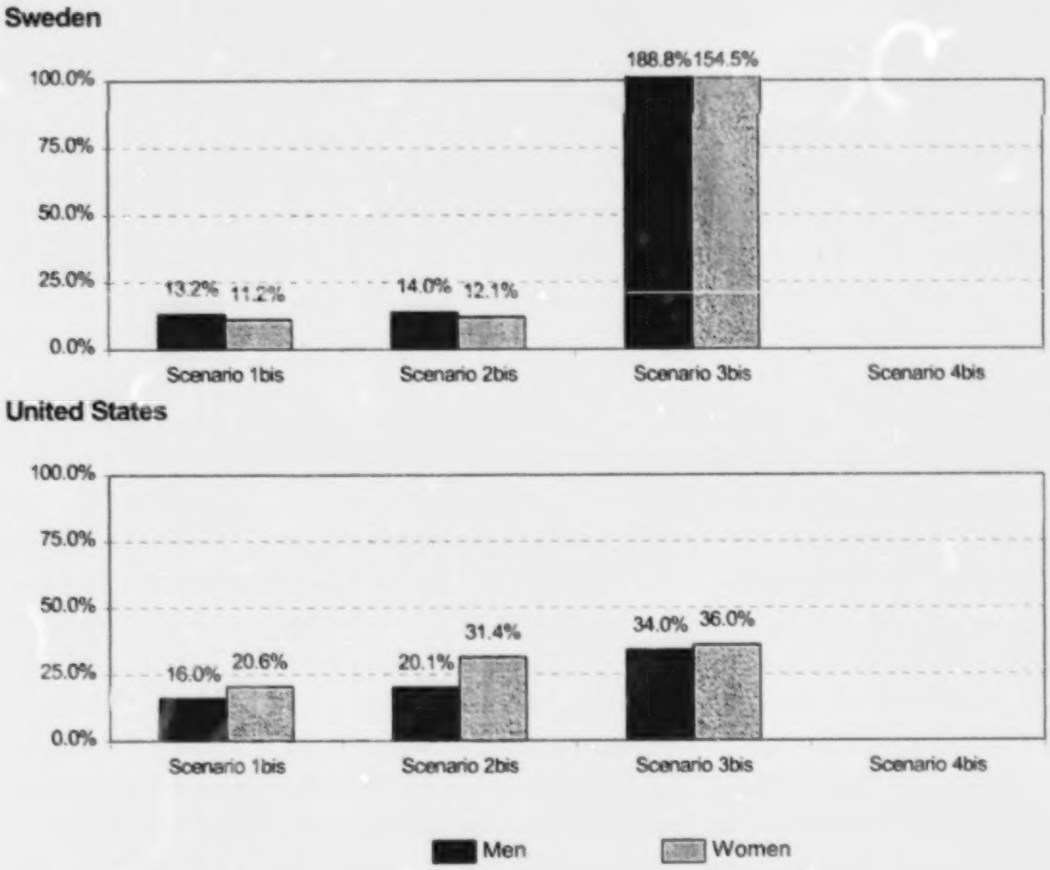
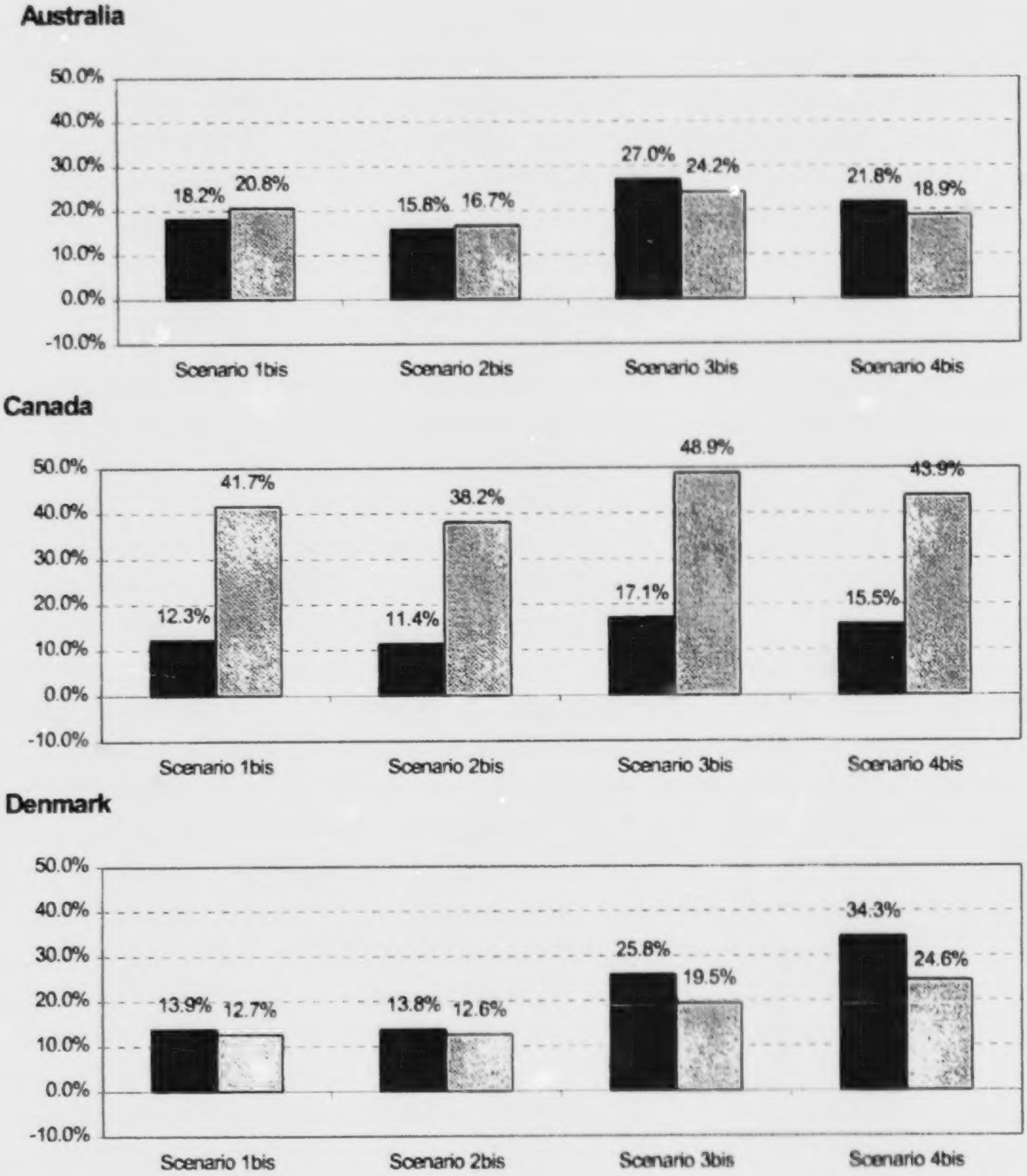
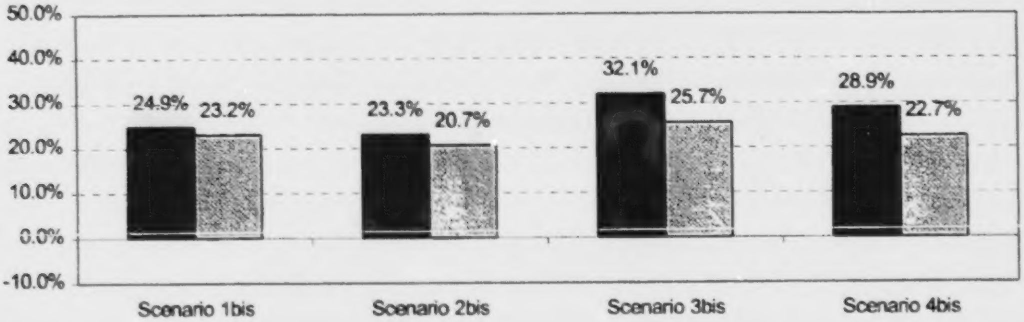

Sweden
100.0%
75.0%
50.0%
25.0%
0.0%
13.2%
11.2%
14.0%
12.1%
188.8%
154.5%
Scenario 1bis
Scenario 2bis
Scenario 3bis
Scenario 4bis
United States
100.0%
75.0%
50.0%
25.0%
0.0%
16.0%
20.6%
20.1%
31.4%
34.0%
36.0%
Scenario 1bis
Scenario 2bis
Scenario 3bis
Scenario 4bis
Men
Women

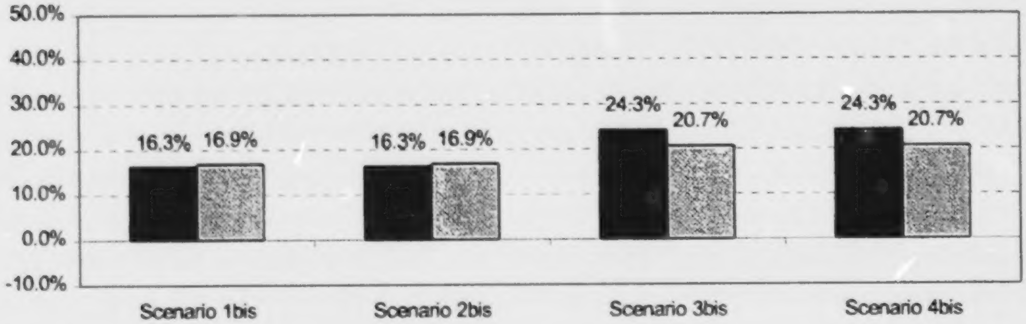
Figure IV.B Fiscal Internal Rates of Return in the Case of Individuals Acquiring a University Qualification Under Different Policy Scenarios with Duration of Studies Reduced by Half, by Gender



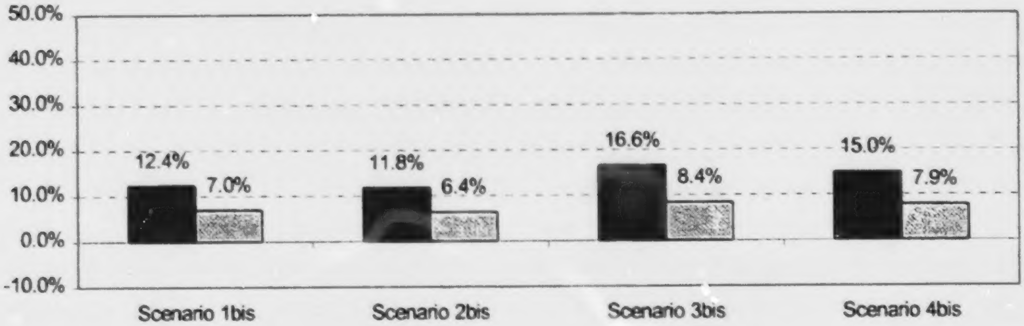
France



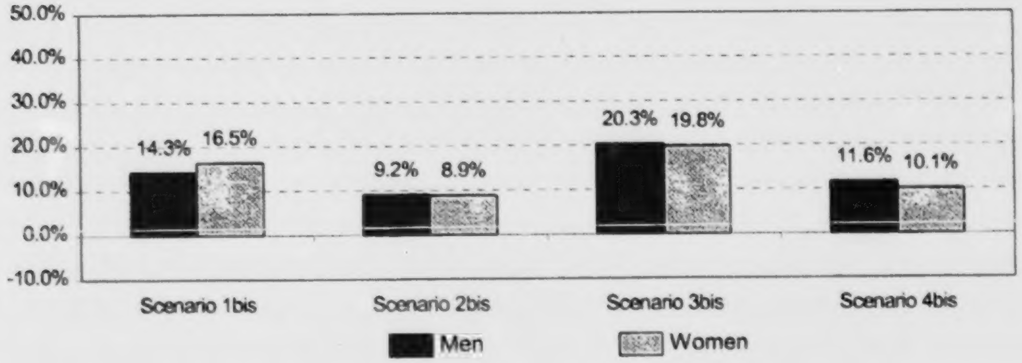
Norway



Sweden



United States



TVET Institution-Industry Partnership in the Colombo Plan Region

(Involvement of stakeholders in VET)

Dr. Shyamal Majumdar
Colombo Plan Staff College for Technician Education
Manila, Philippines

Abstract

Better partnership between TVET providers and industry would improve the quality of work place and enhance teaching/learning systems at the institutes. The nature and strategies of these partnerships vary because of cultural, economic and social factors prevailing in different countries. The relationship between training providers, industry and community in most of the CPSC member countries has traditionally not been a close one. A few member countries are relatively successful in maintaining a close relationship with the industry while others are struggling hard to get the best out of the linkages. The present paper describes the different models of partnership existing in the member countries of Colombo Plan and also discusses major issues and problems of the linkages. Finally it has presented a framework of institute-industry interaction strategies such as problem solving, industrial tours, industrial economies, industry –student relationship, industry sponsored training, staff exchange, placement, curriculum, industry sponsored laboratory and R&D labs etc.

INTRODUCTION

TVET by its nature has to be connected with other sectors of the society, particularly the prime stakeholder, the industry, in order to educate and train the technical personnel and skilled workers needed for socio-economic development. In today's rapidly changing society, it is essential for this type of partnership with the world of work in order to meet the changing requirements.

For achieving this mutually beneficial relationship, there is a need for change in the approach of both the parties involved. The people from the industry should change their strategy. They should not consider the institute, as merely a supplier of manpower, but instead should view it as organizations, which can be helpful in solving their problems. Industry should seek active participation from institutes in attaining their objectives. On the other hand, institutes should get rid of the traditional methods of running the operation and should come out with some innovative ideas to meet the expectations of the industry. So there is a need of common platforms where both the parties can meet periodically and can share the ideas, which can be provided by the industry-institute interaction cell.

The perennial and persistent cry of most of the industries in the Asia Pacific Region is that the graduates they receive from the technical and vocational education and training (TVET) systems do not have the requisite skills, knowledge and attitudes or values to meet their needs. It can be explained by the difference in perspectives of education and industry. Education looks at the general development of students that will give them a wide choice and opportunities to prepare them upon graduation while industries look for technicians and employees with specific skills who will fit directly into their system.

Growth and development in technology have gone so fast that it has resulted in new patterns and paradigms in the region. To sustain this growth, there is a need for a steady supply of trained and educated manpower that can cope with the changes a need for technicians who are prepared to learn at any stage in their career and who can master new skills easily. Industry that is the ultimate beneficiary has recognized the need to develop this kind of human resource in a more systematic and practical way.

STATUS OF PARTNERSHIPS AT COLOMBO PLAN MEMBER COUNTRIES

The relationship between training providers, industry and community in most of the CPSC member countries has traditionally not been a close one. A few member countries are relatively successful in maintaining a close relationship with the industry while others are struggling hard to get the best out of the linkages.

A study conducted by CPSC reveals that TVET institutions in the CPSC member countries cannot expect to maintain relevant high quality vocational and technical education programs that meet the needs of the marketplace unless they maintain good and effective links with private and public companies as well as the community. A relationship among these parties cannot, however, be seen as being the responsibility of only one of them. If industry expects TVET institutions to provide vocational and technical education meeting the needs of the industry, then the industry has a responsibility to ensure that it maintains active links with TVET institutions. The industries usually lack in showing eagerness to take active involvement in this respect.

Gathered from country reports of the member countries of the Colombo Plan Staff College, only about fifty percent have put on records that certain initiatives have been made by their TVET systems to effect institution-industry linkage. However, most of these countries describe such linkages as still weak and needing more push to fully attain the objectives for which they are conceived.

For those countries that have reported strong institution-industry linkage (i.e., Korea, Japan, Singapore, Malaysia, Philippines, Indonesia, Myanmar, etc.) one significant feature that stands out is the existence of a government mandate towards establishing institution-industry linkage. The government appears to play an important role of encouraging technical institutions and industries to engage in strategic alliances through tax incentives, deregulation, collective training services, endowment efforts and scholarship subsidies.

In Korea, work information centre, a leading public R&D organization affiliated with KOMA (Korean Manpower Agency) is involved in i) developing and operating national employment related on-line system ii) carrying out research and development in the area of employment and occupation in collaboration with private sector. Development of work net and employment insurance system in Korea is one of the success stories of the institution and industry partnership in the Asia and Pacific region.

In Indonesia, the collaboration between these two parties has been applied through the implementation of Pendidikan Sistem Ganda or Dual System. However, some collaboration is still under government projects. The best practice of this linkage has been in the area of tourism. Professional associations in the area of tourism collaborate with TVET institutions in the development of competency standards and in making provision of opportunity for students or trainees to have internship program or on-the-job training.

In the Philippines, the linkage has been supported through the issuance of legal basis principle that provided the basic legal framework. Republic Act No. 7686 signed on February 25, 1994 includes the incorporation of tax incentive provisions designed to encourage industry to allow students or trainees to do the actual work.

In many developing countries, in particular in the Colombo Plan Region, the linkage between training institutions, industry and community has been seen as having more problems for the possible provision of opportunities for work experience and placements. Although TVET providers have been in existance for decades, evidences show that most of them tend to view the students not as trainees, but as objects to be used for cheap labors.

EXISTING MODELS FOR I-I PARTNERSHIPS

Some of the important models of Industry-Institution (I-I) linkage that worked in TVET systems in the member countries of CPSC are discussed below.

- **Dual Training System** – This involves two venues of learning: the **school** and the **factory** or the workplace. The effort to synchronise both venues of learning enhances the development of the trainee's skills. In the school, the trainee learns the theoretical foundations of a specific skill or a set of skills through classroom instruction and workshop practice. In the factory, or in the actual workplace, the trainee applies the basic skills learnt in school, masters it, and then goes on to acquire the advanced skills (Shoenfeldt, 1986).

Also, exposure to the actual work situation, the proper work values are given a chance to develop. The trainee undergoes theoretical work on values instruction in the institution while values are given a chance to take root and mature through practice in the workplace. Moreover, the industries/factories involved in the training benefit from the training programme. Industries are made to shoulder the burden not only of the development of a trainee's skills and attitudes but also of in-school training.

Thus, the objective of the dual training system is a strategic alliance between the educational system and the private sector. This is to match the needs and core competencies of the educational system, on one hand, and that of the employment system, on the other, to take advantage of strengths and opportunities and minimize the effects of the weaknesses and threats to the two systems or turn such effects into opportunities instead.

- **Establishment of a mechanism or incentive for sustained industry involvement**—The levy system is one way of ensuring industry participation in training activities. It ensures that industry will benefit from its activities related to training its own workers, since it is only through training that they will be able to recover their contributions to government coffers for training.

- **Allowing industry leaders a strong voice in the policy-making bodies of training institutions**— This is a strategy of putting leaders of industry in some leadership roles in policy-making bodies of training institutions. Their active participation and involvement will make the industry feel ownership of the problem of the institution. This may result in the industry's involvement in and commitment to the meaningful and effective training of students.

Linkages in this CPSC region take many forms and there are particular terms associated with these training modalities. Among them are co-operative education, apprenticeship, on-the-job-training, and industrial attachment/experience or work placements. They perceive that the linkages enable students to perceive the conditions prevailing in the workplace and yet to stimulate their interest by the provision of more varied experiences rather than adhering to traditional courses.

FORMULATING POLICY REFORMS TO PROMOTE I-I LINKAGES IN SOME OF THE DEVELOPING COUNTRIES OF CPSC

Some of the developing countries in the CPSC region have initiated policy reform to promote I-I partnership. A few examples are illustrated below.

- National Education Reform Policy of 1991 of Papua New Guinea (PNG) led to the initiation of the Diploma of Vocational Education and Training (DoVET) programme involving government as well as NGOs and private organisations to provide training that have industry-linked and/or industry-based training in accordance with the National Industry Standards. These courses are credited towards the DoVET programme. In addition, the DoVET programme has been designed and engineered in such a way that the programme links with other approved public and private sector training providers. Vocational Education Curriculum courses for the DoVET programme are designed, developed, and delivered at technician or Level II competency standards according to industry standards and world's best industry practices. In this arrangement, some training providers were identified to be on-line to train DoVET students. Currently, the DoVET students are doing a three-week industry-based training with various industries (e.g., ELA Motors that is the leading dealer and distributor of products from leading companies worldwide like Toyota, Daihatsu, Hino, Yamaha and Renault)

- In Myanmar, a policy that fosters I-I collaboration is the formulation of instructions issued from the Cabinet to the respective Ministries to allow the graduating students of Government Technical Institutes to do on-the-job training (OJT). Certificates are not given to the students who do not participate in the OJT.

- In an effort to bring education closer to providing industry requirements, the Philippine Government initiated adopt a-school program, apprenticeship program, public investment program and TESDA act reform of 1994: The State encouragse active participation of various concerned sectors, particularly private enterprises, being direct participants in and immediate beneficiaries of a trained and skilled workforce, in providing technical education and skills development opportunities.

- Occupational standards setting – Establishing occupational skills standards can be a very difficult job to do without the participation of industry. In Korea, Japan, Malaysia, Singapore and Philippines, for example, an expert panel is first formed to develop the occupational standards. The expert panel composed of industry experts identify the competencies that are required of an occupation. A competency is defined as consisting of skills, knowledge, attitudes and values that a worker must possess to be an effective worker in the industry

ISSUES, CONCERNS AND PROBLEMS

A number of major areas were identified as the potential problems of cooperation between the parties in the less developed countries of CPSC. These areas are:

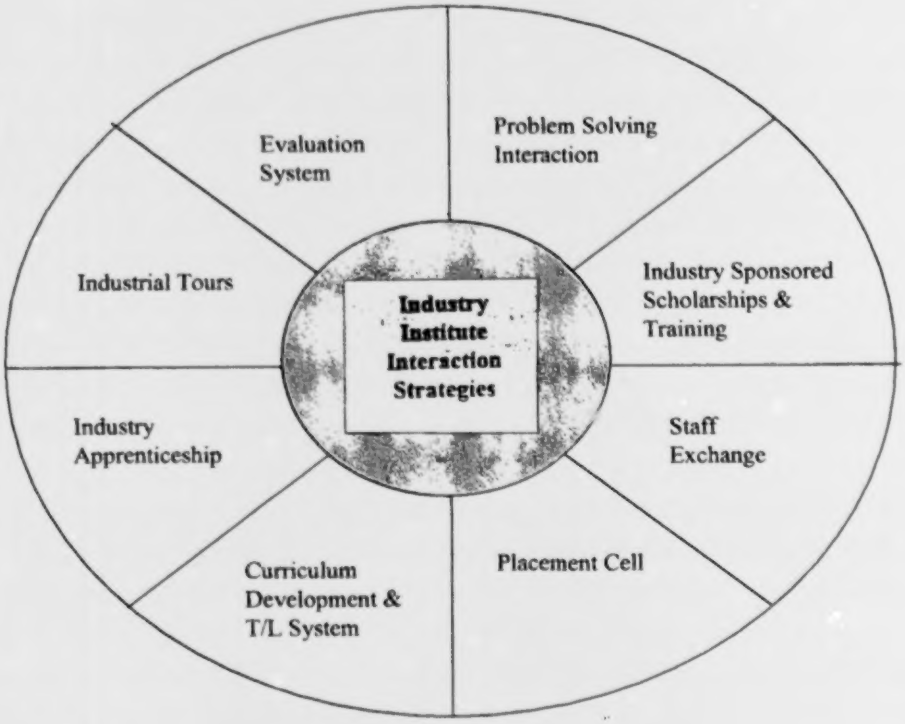
- lack of interest to cooperate,
- shortage of funds,
- lack of rewards and incentives,
- less cooperation,
- absence of cooperation policy,
- bureaucratic hindrance and regulation,
- skepticism of the benefits gained by both parties and
- shortage of industrial liaison officers and I-I cell.

The problem of "a cooperation policy" was perceived as the most critical ones.

Some other problems encountered by the TVET systems in the region pertaining to Industry-Institution linkages are lack of planning, less emphasis on psycho motor skills, non involvement of the industry in technical education system, , absence or lack of industries within a locality, difficulty in undertaking OJT in remote areas, lack of interest of industrial personnel in the training of the students, etc.

CONCLUDING REMARKS

The nature of linkage in CPSC member countries (except a few) may have not been in the same status as those in developed countries, but there has been a growing awareness that collaboration will ensure students or trainees to have requisite skills, knowledge and attitudes to be relevant in the workplace. The ideal kind of Industry-Institute interaction strategies has been conceptualised in the following framework:


Evaluation System
Problem Solving Interaction
Industrial Tours
Industry Institute Interaction Strategies
Industry Sponsored Scholarships & Training
Industry Apprenticeship
Staff Exchange
Curriculum Development & T/L System
Placement Cell

The type of strategies which may be adopted are discussed below:

Problem Solving Interaction

The industry can assign certain projects for improvement in the prototypes and their technology to institutes who would solve such intricate problems and the industry should develop the R&D infrastructure of the institutes.

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Industrial Tours

The visits to the industry for the practices will help the students to observe and know various technical, managerial aspects and the specialties of the industry. The students should be taken to the industrial plants/concerns, power stations, bridges, dams and other such projects under construction. Such tours will broaden the mental horizon of the students and also give the true picture of the on- going work. The students should prepare the technical report and submit to the concerned teacher for evaluation.

Evaluation System

The industry should be involved in each stage of evaluation of the students through interviews, viva, seminar and projects.

Industry Sponsored Scholarships

Introduction of development funds in the form of scholarships, stipends, insurance and even sponsorships by the industry will greatly encourage the students to continue the study and a way to get best talent for the industry.

Industry Sponsored Training

Industry should have some students trained at its own expense at the training institute. The eligibility for sponsored admission should be the same as those in the institutes. The industry can have them trained in a specific discipline as needed by the industry. This system should be introduced by the industry in consultation with the institutes.

Staff Exchange

Staff exchange between the industry and the institutes is one of the keys to make I-I successful. The institutes' staff will enrich from the workshop floor experience of the industries. They would become familiar with the latest technology, sophisticated machines, their efficiency, handling, maintenance and finally the quality of the products. People from the industry, on the other hand, will learn the latest research and management techniques from the institutes.

Placement Cell

The employment guidance to the passing students should be made available at the campus. The placement cell should have all the facilities of an employment exchange.

Curriculum Development and T/L System

There should be some mechanism to involve industry representatives in formulating the curriculum and teaching learning system. This will make the curriculum meeting the industrial expectation and training will also be at competency based, which is the need of the hour today.

Industry Apprenticeship

Admittedly variety of machines, large variety of products being manufactured, different levels of working on the components being produced and the assembly line through which the components have to pass through to reach the final stage, can best be learnt in the industry and not in the institutes where such facilities are wanting. It will be of advantage to both the students and the industry, if after completing the formal course at the institutes the students go into an industry for a period of six months work and there as apprentices.

Routine and non-innovative teaching at the technical training institutes would not suffice. The needs of the public and other sectors in the new century would demand strenuous efforts on the part of the technical institutes so that the product they turnout is efficient, have the vision for the future and all their efforts are directed to the following series of demands. These needs again the close interaction between the technical institute and industry. Institution-Industry linkage contrivance relates to some concerns and issues confronting TVET in the region. There is a relationship, though not direct, between Industry-institution linkage and efforts to recognize educational qualifications from other countries as well as the requirement for standard policies on accreditation, certification and assessment arrangements. It is perceived that the stronger I-I linkage is, the greater is the tendency for social partnership as well as economic partnership between and amongst the different member countries.

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Session 2 : Country Reports

Case 1 : Germany

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Abstract

Assesment and recognition of learning and training

The German VET-system is characterised by a system of recognised vocational education and training (VET) – standards (state-recognised training occupation) including also assessment and test-standards. In essence they con be classified as follows:

- **state-recognised training occupations** (ISCED level 3) within the dual education and training system (such as industrial clerk or mechatronic), which are regulated by federal legislation,
- **school-based state-recognised training occupations** (ISCED level 3) in the areas of commerce, engineering, health and welfare, design etc. (i. e. public relations assistant), which are generally regulated by Länder legislation, with the exception of health care, which is subject to federal law,
- **state-recognised professions based on higher education** (ISCED level 6) for which the respective degrees may be obtained at a technical college (= Fachhochschule) (i. e. graduate specialist engineer) or at a university (i. e. graduate psychologist) and which are subject to State (Länder) legislation.
- Besides and between that, there are also **occupations requiring further training qualifications** (ISCED level 5), with their applicable regulations for further training based on the BBiG or the HwO, respectively.

The above mentioned occupations and professions are the main response of the educational system to labour market demand. They combine comple competences and skills needed to

master highly specialised and comprehensive requirements of different workplaces and operational fields, but they also include social aspects, such as social integration within the respective companies, capability for team work and social status.

Financing mechanisms for VET

In Germany there exist clear funding arrangements: private enterprises take responsibility for their own training costs (i.e. renumeration, instructors, naterial), government takes responsibilty for school funding, VET-research and programmes to promote cooperative VET.

In the field of continuing training the activities are carried out by companies, by commercial or non-commercial training providers, by private trainers etc. are a growing market with an assumed total turnover of more than 40 Billion (Mrd.) Euro. Continuing training is paid for, if the participants are employed persons, by their employers or/and by themselves. If they are unemployed most continuing training activities are funded by the Nation Labour Offices‘ budget.

Involvement of stakeholders in VET

The success of the German VET-system is based on cooperation between the Federal Government (which enjoys legislative powers in respect of in-plant training), the States (Länder) which enjoy legislative powers in respect of vocational schools), the employers and the trade unions in the provision of vocational training.

Employers conclude contracts with the trainees, carry out instructional courses on their own responsibility in line with statutory requirements, and bear the bulk of the costs. They are also legally obliged to offer training places on equal terms to both male and female applicants alike.

On the strength of several statutory regulations, such as the Vocational Training Act, the trade unions have acquired participation rights in the planning and implementation of vocational training. They enjoy equal representation on the "vocational training committees" of the chambers. At the level of the states they also enjoy equal representation on the "Land Committees for Vocational Training", together with representatives of the employers and the public purse. At federal level the trade unions enjoy equal representation on the "main committee" of the Federal Institute of Vocational Training.

1. Macroeconomic context for VET: economic and employment trends

Total population in Germany is about 82 million, appr. 40 million male and appr. 42 million female.

Persons in employment: appr. 36 million, appr. 20 million male and appr. 15 million female.

Unemployed persons appr. 4,1 million; unemployment rate 10,1 %. Unemployed persons, adolescents under 20: appr. 140.000, rate: 9,2 %.

Gross National Product: 3.845,9 billion DM (1999)

Growth rate: 1,3 % (2001)

2. The German VET-system: Overview of the system, it's structure and recent reform measures

2.1 Structure of VET-system

The German VET-system can generally be divided into three main pathways: Initial vocational training, continuing vocational training and retraining. It is characteristic of the German Vet-system that the three pathways are institutionally relatively independent and differ in their core features and mechanisms:

Initial vocational training (i.v.t.) provides basic formal vocational training for young people between from 16 to 20 years according to state-recognised training occupations within the dual vocational and training system or according to school-based state-recognised training occupations. Opposed to most other countries in the world, where initial vocational training is carried out mainly in schools, Germany has a long tradition of initial vocational training within the dual system and about 80% of young people who opt for VET are trained in the dual system. Initial vocational training in the dual system does not only take place in alternate training places - in the enterprises and in part-time vocational schools. Furthermore, enterprises bear the whole costs for the provision of training at their own premises. Formally, the only precondition for access to vocational training is completion of lower secondary schooling. Duration of initial vocational education and training varies from 2 to 3,5 years. In generally it comes up to 3 or 3,5 years. It may be shorted for young people with upper secondary leaving certificates and for high-performance trainees.

Due to the rapid changes in economy and society there is no doubt: all efforts to foster initial vocational training activities will not be sufficient to ensure of up-to-date competent labour force. Therefore it will be no less important to provide **continuing vocational training (c.v.t.)** for the existing labour force, even to those labourers and employees who are beyond the age of 50. But quite in contrary to i.v.t., which is characterised by a regular system of training ordinances, occupational profiles and recognised certifications, c.v.t. in Germany cannot be characterised as an coherent and regular system.

Retraining in a recognised training occupation under the German retraining model provides adults the opportunity to obtain vocational qualification for the first time or, if the current occupation no longer offers any job prospects in the labour market, to be trained for a new occupation. This opportunity to acquire a new vocational qualification is of special importance to many working persons as a result of economic and structural change and the resulting need for people to reorient themselves occupationally.

2.2 Challenges and recent reform measures

For decades Germany's VET system, especially the Dual System, has been widely praised for its close contacts to the workplace as training venue, for its leadership in marrying labour market and educational needs and for its capability to provide the majority of each age group with high quality training opportunities. In the mid - nineties the provision of training places went down significantly and the growing need for qualified personnel in the new labour markets like information technology, media and in services was not met by an adequate offer of graduates from the Dual System. All of a sudden the long time champion in education found itself in a system crisis debate and was blamed for the rigidity and inflexibility of its standards and regulations, for not delivering "enough and at the right time", and for the lack of links with continuing vocational training.

Federal Government and the Federal Institute for Vocational Training were accused for not having recognised the labour market needs early enough and for not being willing to accept a change of paradigm: from the occupational pathway concept ("Berufskonzept") of two to three year training tracks to a fragmented vocational qualification concept ("Modularisierung") which recognises that work organisation is changing from occupational orientation to process orientation. Not only government and research, but also employers and trade unions, as social partners the stakeholders of the Dual System, came under strong political and media pressure for not being able to change their traditional habits of long negotiations on new and flexible standards.

In 1996, after a rather short period of preparation, the social partners, government and research reached a break through. Within an up to then unmatched short development period of six months they presented four new VET standards and occupations for the cross sector field of information and communication technology (ICT), which became the prototypes of more flexible and adaptable VET standards. Not only this, the development process itself set new standards for early recognition of change, revision and a new concept of basic and occupational skills, knowledge and capabilities.

Since 1995 almost 40 new training occupations and VET standards have been created and some 120 have been updated and modernised. The total number of training occupations, however, has been reduced to 348 by 2002. New assessment schemes have been developed, additional qualifications like foreign language, communications skills have been introduced and can be acquired by trainees in the course of training.

At the beginning of the new millennium the "dual training system", already looked upon as being outmoded in the mid-nineties, is back in the market. Some 620.000 training contracts were concluded in 2000, some 50.000 more than in 1995. New training standards, namely in the ICT field, have caused an increasing demand for training in the new occupations; in ICT occupations alone some 70.000 young people are trained currently. Drawbacks, however, are still in the discussion, although flexibility and responsiveness have significantly improved:

- the links between initial training and continuing training in other occupational fields than those of the new economy are still weak and efforts have to be strengthen to provide VET throughout life;
- access to continuing vocational training must be promoted – particularly with a view to the needs of diverse target groups (e.g. unskilled labour, unemployed people, older employees);
- recognition of occupational learning achievements to further and higher education has made very little progress; the number of "meister" (supervisor) studying at university – though legally entitled to – is too small to be mentioned;
- the early recognition of qualification needs often neglect educational and labour market research findings. Chamber proposals for new training occupations more often follow short term economic interest than a sustain-able concept of a long term training perspective for generations to come.

3. Assessment and recognition of learning and training

3.1 Initial vocational training

The German .i.v.t.-system is characterised by a system of recognised vocational education and training (VET) – standards (state-recognised training occupation) including also assessment and test-standards. In essence they can be classified as follows:

- **state-recognised training occupations** (ISCED level 3) within the dual education and training system (such as industrial clerk or mechatronic), which are regulated by federal legislation,
- **school-based state-recognised training occupations** (ISCED level 3) in the areas of commerce, engineering, health and welfare, design etc. (i. e. public relations assistant), which are generally regulated by Länder legislation, with the exception of health care, which is subject to federal law.

The main characteristics of state-recognised occupations are the training standards defined for the attainment of the relevant qualifications and for information of the labour market. Their legal basis is the Vocational Training Act (BBiG), which lists the following requirements and components laid down in VET-standards:

- Designation of the respective state-recognised training occupation e.g. mechatronic, industrial clerk etc.,
- Duration of apprenticeship,
- Occupational characteristics and profile which describes, which group of work activities must be undertaken and the manner work has to be done,
- Training specifications which describe the learning goals, the theoretical and practical knowledge to be taught, the methods and learning sides
- Assessment requirements which lay down which work activities are to be tested at the end or in the course of training and what minimum level of knowledge and skills must be demonstrated.

Both, companies as well as schools are obliged to fully deliver the respective standardised training schemes. As far as initial vocational training is delivered by companies the chambers have the legal capacity to supervise and monitor all initial training activities with regard to these standards. It is them who are responsible for quality assessment and who are entitled to establish examination boards, to carry out the examinations, and finally to hand out the certificates. Vocational school training is supervised by school supervision bodies who are responsible for quality assurance as well as for assessment and examination.

3.2 Continuing training and retraining

Quite in contrary to initial vocational training, which is, as shown above, based on a regular system of training ordinances, occupational profiles and recognised certifications, continuing vocational training in Germany cannot be characterised as one coherent and .regular system. In contrary, besides existing state recognised assessments and certifications with applied regulations for respective qualifications (e.g. for the craft sector there exists a clearly defined master-certification system which applies -up to a certain degree -also for the certified industrial-master), the majority of c.v.t.-activities, if ever certified, does not include any state recognised regulations. There exist numerous examination-ordinances at single chamber-district level, e.g. in the field of skilled industrial administration and commercial jobs. But, the vast majority of all certificates, which are handed out by the single Chambers to successful examinees, e.g. bachelor of media engineering or bachelor of tourism engineering - follow a scheme that has been developed by the German Industry and Trade Chambers Head Organisation, which is however not compulsory. The remaining part of continuing vocational training activities , which is the overwhelming majority, if ever certified, does not include any formal recognition.

C.v.t.-activities are carried out by companies, by commercial or, non-commercial training providers, by private trainers etc. Retraining activities that are funded by the National Labour Offices' budget are carried out by commercial or, non-commercial training providers or by private trainers as well. Opposed to continuing vocational training, retraining is based on the same recognised VET-standard criteria as described for i.v.t. The National Labour Office also registers all relevant training offers and providers. This does however not include any certification (e.g. with regard to ISO 9000 ff.) or formal recognition of providers and courses. Decisive and applicable selection criteria according to which providers and courses can be judged by their prospective customers as solid, appropriate, and suitable do hardly exist.

In its Report on Vocational Training, the Federal Government stresses the necessity to further develop certified and recognised continuing vocational training measures as well as to implement comprehensive strategies for lifelong learning. While formal education and training qualifications remain an important reference basis, the importance of learning outside of the formal education system is growing significantly. To make possible lifelong learning and safeguard individual employability, efforts have to be strengthen to achieve a useful combination of formal learning and experience-based informal learning. This must include changed forms of learning, and a new learning curricula and tools, both inside and outside the workplace.

Currently various instruments are being tested in Germany for assessing non-formal and informally acquired competencies – an area which is not legally regulated. The instruments in question have been developed especially for use in companies and are being applied by companies. As first examples show, assessment of informally acquired skills is not only becoming increasingly important for „regular" employees, but also for disadvantaged groups or persons who, for example, failed to earn adequate educational qualifications in their youth and who now wish to receive credit for competencies they have acquired through life experience.

4. Financing mechanisms for VET

Considering funding of VET, it is also necessary to follow the differentiation in i.v.t. and c.v.t or retraining.

Funding of **initial vocational training** in generally is based on public funding according full-time or part-time vocational school training (appr. € 2,6 Billion in 2000). Furthermore special VET-programs for disadvantaged or handicapped young people are subsidised by the public sector as well (appr. € 0,7 Billion in 2000).

On the other hand initial vocational training , as far as it concerns in-company training, is funded by enterprises and by no means - compared with public funding - enterprises bear an overwhelming part of initial training costs. Round about 78% of all expenses for the provision of initial vocational training in Germany are assumed by the individual companies which carry out this training. With estimated expenditures (2000 by € 20 Billion) this is indeed a very particular and specific item of the dual system. Companies, which provide initial training, assume all related expenses: establishment of training facilities, full- and part-time trainers, training requisites and training remuneration. The actual initial training costs vary strongly from company to company. Some companies even manage to achieve net gains from their training investment, while other companies incur annual cost of 10.000 Euro or more per trainee.

Many of foreign experts wonder at the first glance what interest firms might have in providing training at their own cost. From a micro-economic point of view it would seem hardly rational to invest in non-specific, certified vocational training if at the same time non-training firms are able to earn the benefits from such training by hiring trained workers through the external labour market ("poaching"). But there are some good reasons why companies are willing to invest in initial vocational training. First one should emphasise – as has already been mentioned – that in-company training not only incurs costs. The work performed by an apprentice is also productive to a certain extent, especially in later periods of training. On the other hand considerations such as the opportunity costs of hiring skilled personnel from the external labour market, which have to be trained on the job, and the potential dismissal costs in the case that the externally hired worker turns out to be "bad matches" play an important role in motivating companies to incur the costs associated with initial vocational training. In the case of large enterprises one has to add the external benefits resulting from good relations, a good reputation in the local community, good customer relations, etc.

Regarding funding of **continuing training** and **retraining** the sharing of costs is quite different. In recent years increasing time and costs are afforded by enterprises to update the knowledge and skills of their own staff and to promote human resource development of their employees – with the result that costs , spent for continuing training in companies climbed over the costs which enterprises investigate in initial vocational training. For 2000, a survey estimated the companies continuing vocational training expenditures by € 24,2 Billion.

Emphasise has to be drawn on a second important aspect. In recent years the percentage of employees burden costs for continuing training by themselves, has increased too. Both, the rapid changes in work and an increasing risk to get unemployed on the one hand, and the efforts to promote career advancement on the other hand are motivating more and more employees to investigate in continuing training by themselves. Estimated expenditures spent by the employees themselves are € 22,8 Billion.

Third important player in funding continuing training is the Federal Office of Labour, which subsidises training and retraining for jobless people or - to a certain amount - for those employees, which risk to get unemployed. In addition the public hand subsidises special training programs for minor employment groups, supports measures to reintegrate women into the labour market etc. Both funding of the Federal Office of Labour and funding by the public sector comes up to appr. € 22,8 Billion.

5. Involvement of stakeholders in VET

In Germany there exists a long tradition of joint responsibility of public and private authorities with regard to all important decisions on the development of VET. The main stakeholders involved in VET are: The Federal Government and the four responsible ministries – Education and Research, Economics and Technology, Labour and Social Affairs, Interior -, the States and within the States also the ministries of Education, Economics and Technology, Labour and Interior, the representatives of the Employer's Associations, especially the chambers and the representatives of the Trade Unions (Fig. S. Bahrain 16).

The involvement of stakeholders is based on some core preconditions:

- A basic training law, the Vocational Training Act of 1969, that set the stage for private-public partnership in VET and describes the roles of stakeholders, their obligations and rights;
- The readiness of the public sector (Federal Government, States) to accept the private sector as partner in VET on an equal footing;
- The readiness of the private sector to accept quality control of its educational and training activities in initial training;
- A top-down strategic concept and decision making process based on a consensus between public authorities and social partners to implement a co-operative VET-system;
- A joint involvement in VET-systems arrangements, e.g. VET-standards, assessment, quality assurance, awarding bodies etc.;
- Active involvement in VET-research carried out by the Federal Institute for Vocational Training (BIBB).

Co-operation between government and social partners is a constituting element for all issues and settings in VET. In the practice of vocational training, all co-operation is based on consensus, no regulations concerning initial or continuing vocational training may be issued against the declared will of either of the two social partners. Thus, initiatives for VET-reforms either stem from the social partners or have to meet with their acceptance, as is also confirmed by the latest resolutions on initial and continuing training by the "Bündnis für Arbeit, Ausbildung und Wettbewerbsfähigkeit" (alliance for work, vocational training and competitiveness).

In their mutual resolutions, government and social partners not only agreed on the above elements for a contextual vocational and educational reform, but also took into account new tools and instruments for the continuation of their strive for modernisation.

Case 2 : France

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Abstract

The latest debates on TVET in France have taken place in a most favourable economic context where growth was steady and unemployment decreasing, also for young people. This was mainly due to a tremendous creation of new jobs, driven by the tertiary sector. The terms of these debates have proved however to be very different whether they were addressing initial vocational training or further education and training.

1. The French VET system

There exist three pathways for young people to access VET : the school-based vocational training managed and run by the Ministry of Education; the apprenticeship organised, under the responsibility of the Regions, by the social partners; and the attendance of schemes to enhance the integration of the young people into the labour market, managed by the Ministry of Labour.

A Law from 1971 has anchored an individual right to further training. Both public and private training providers are free to offer training products and services. Firms have a legal

obligation to provide further training. Sectoral organisations jointly run by both sides of industry manage the dedicated budgets.

As for the unemployed, the Association for the Vocational Training of Adults (AFPA) provides training that can lead to nationally recognised qualifications.

Amongst the most significant reforms of these systems in view of enhancing vocational education and training throughout life, the most important one is the professionalisation of higher education. Recently, the Lycées des Métiers (Trade High Schools) have run on an experimental basis, aiming at enlarging the educational and training offer of the teaching establishments of the ministry of education. The accreditation of prior experience also contributes to these developments.

2. Qualifications assessment and certification

France has very diverse certification systems. Despite recent changes, the spine of them all remains the diplomas'system of the ministry of education. As a whole, three certification systems will be described : the public diplomas, the procedure of "homologation" and the sectoral qualifications. Recent legal developments provide for the setting up of a national register of certifications managed by a national commission. They also comfort and enlarge the right to the accreditation of prior experience.

3. Financing VET

The financing mechanisms are very different between initial VET and further training. For the former, the access route (see above) determines the financial rules applied. For the latter, firms have a legal obligation to spend yearly a pourcentage of their wage bill for further training purposes. Contributions of the individual are quite marginal, but recent debates encourage co-investment.

4. The stakeholders acting in VET

The four main groups of stakeholders – the State, the social partners, the Regions and the training providers - are mostly all intervening at all levels of the VET systems : design, delivery, assessment, accreditation and financing. They do so quite differently however and their respective importance varies according to the VET segment considered. The set-up of their inter-connections will be described

The general economic situation of France has evolved during the last ten years very similarly to that of most west-european countries: a fair and fostering recovery from 1997 to 2001, succeeding to five very poor years in terms of investment, consumption and employment. This recovery was mainly consumption-driven, due to consumers confidence and strong expenditures, leading to better employment. A virtuous circle was set in motion, generating more confidence and more expenditures. Investment was on the track to follow and was reinforcing, when financial bad news at the beginning of year 2001, and then political ones in the second half of the year, slowed down the pace.

The latest debates on TVET in France have taken place in this most favourable economic context where growth was steady, employment booming and unemployment decreasing, also for young people. Within four years, from 1997 to 2001 increase in GDP reached 14%, and in employment 7 %. Such figures about employment had never been met for thirty years. This was mainly due to a tremendous creation of new jobs, generated by the market-driven tertiary sector. In year 2000, employment in this secor has grown by 4%, particularly in the business services (6,1%), transports (4,7%) and commerce (2,7%). Three fourth of total employment are in the service sector, 28% of it within administered services (health, education, administration ...).

The obvious improvement of the economy and of employment has been of particular benefit to young people. The unemployment rate of 15 to 24-years old decreased from 28% in 1997 to 18,7% in March 2000. For the overall active population the total rate at the same date was of 10% and it continued decreasing to reach 8,8% of the active population in March 2001, its lowest value since 1984. All statistics bring the evidence that qualifications are a good protection against unemployment. Workers without qualification, especially young people, experience dramatic unemployment spells : 14,1% in the total active population and 43% in the age group 15 to 24.

Debates on TVET have been influenced by this overall situation. Their terms have proved however to be very different whether they were addressing initial vocational training or further education and training.

1. The French VET system

Like in most other countries, the French overall system of vocational education and training consists of three sub-organisations : the initial vocational education and training for young people, the further training of employed workers and the training or retraining of unemployed job-seekers.

1.1. Initial vocational education and training for young people

There exist three pathways for young people to access VET : the school-based vocational training managed and run by the Ministry of Education; the apprenticeship organised by the social partners under the responsibility of the Regions; and the attendance of schemes to enhance the integration of the young people into the labour market, managed by the Ministry of Labour (slide n°1).

Depending on which routes they have engaged, young people do not have the same status. In the school-based education, they are considered as pupils; in the apprenticeship they are salaried workers; and in the schemes they are either one of the statuses, according to the nature of the scheme.

In terms of volume, the three routes are quite different : at upper secondary level, for the school year 1999-2000 2,2 millions were in the school-based tracks (general, technological and vocational) and only 360.000 in apprenticeship (about seven time less). When it comes however to mere vocational education and training, the school-based group of pupils lowers to about

700.000 which makes about only double as much as the apprentices. In the same school year, the 17-year old youngsters were up to 28% in school-based vocational education, 9,7% in apprenticeship, some 50% in general education and about 8 percent not in education/training anymore.

Usually vocational routes are not the first choice of youngsters. Very often they are dealt with as routes "by default" for those that are not performing enough in the academic subjects. However, the restructuring of apprenticeship has lately contributed to an improvement of the image of vocational routes. Especially since access to all levels of qualifications has now been opened to this learning method. The number of young people taking up such contracts has therefore been steadily increasing, most rapidly for the higher levels of qualifications (2 years and more after Baccalauréat).

A second factor has also contributed to a better image of vocational education and training, which is linked with career development. It is the opening of vocational routes into higher education, thus allowing for a bigger upwards mobility. At the end of the sixties the Higher Technician Certificate (BTS) was put in place. It met soon a fair success : on the labour market where firms would recruit greedily this kind of technicians who were really needed; by families and young people who could get within two years a higher education degree and subsequently and rather easily, a good job. From the beginning of the 70's, a second way into vocational higher education was opened : the technological University Degree (diplôme universitaire de technologie: DUT) run by universities. Together with the BTS, it boosted the whole French vocational system, giving it the prestige, the good image, the efficiency, it badly needed. It certainly drained a proportion of the best scholars coming from the lower middle and the middle middle classes. This occured partly at the prejudice of the universities that lost parts of their natural breeding.

Following this good success the next step has been the creation of Vocational Baccalauréats (BacPro). These degrees were part of a huge and ambitious political frame, whose target it was to bring 80 % of each school generation up to the "Bac" level (or A-level). This could only be done by opening new ways of achieving that degree, with other contents and pedagogical means. Success was not at the next corner, but it came progressively : today almost 20 % of Bac degrees are obtained through this route. This half success induced a side effect : it was partly gained to the prejudice of the lower education degree, namely the "C.A.P." (certificate of vocational aptitude). This is particularly true in the tertiary tracks in which those with lower degrees had more and more difficulty getting jobs.

Two years ago, new Vocational Degrees ("Licences Professionnelles") were set up. Their initial purpose was mainly to lower the high number of students leaving University without any diploma, and without any vocational knowledge or experience to propose to future employers. They intend to open new outlets for those who cannot attend long higher education tracks in academic fields. It appears that most of these training places are seeked and gained by students already in the above described vocational higher education tracks (BTS and DUT). They expect these specialised further degrees, of a one-year duration, to improve their future promotion opportunities. Managers of these new educational degrees rather accept in their courses good students coming from the vocational tracks than despaired students in a situation of failure coming from the general academic tracks.

These new tracks are very recent : an evaluation of their take-up and outcomes is underway.

1.2. Further training of employed workers

In France, further training of employed workers is legally regulated and organised. A Law from 1971 has anchored an individual right to further training as well as a legal obligation for firms to finance it. Industrial bodies, jointly run by both social partners, support the management of these dedicated budgets. Around these activities, an important market of training providers has emerged.

- **Employers obligations**

Their legal obligations include : the adaptation of their personnel to the evolutions in the content of their jobs; retraining of redundant workers; and training in work security provisions. But employers do not have the formal obligation to provide improvement training. However, the Law encourages them to design a yearly training plan for their employees and, in conducting it, to comply with their financial requirements. As a consequence, most of all company-driven training activities (97% in 2000) were included in such a plan. To set-up and manage these plans, statistics show that enterprises are increasingly sub-contracting to sectorial organisations, the OPCA (the accredited joint collecting bodies).

But the first obligation of employers is a financial one. The mandatory training levy is fixed at 1,5% of the gross wage bill for firms with more than 10 salaried workers. Statistics show however that in year 2000, firms have directed some 3,2 %, that is the double of their obligation, to training activities. Since the last five years however, this rate is slowly decreasing and seems to point to a relative decay.

- **Individual rights**

Through the 1971 legislation, employees have been given a right to further training. This right goes beyond the benefiting from employer's training activities. It includes two mechanisms that allow for own initiative in the choice of the training content. With a view to "improve, broaden or increase one's own qualification" an employee can apply either to an "asset in training time" or to an individual training leave. In the first case, when accepted by the employer, the training must be part of the training plan and will be financed partly by the levy funds, partly directly by the employer. In the second case, the employer cannot keep his/her employee from taking a leave of absence for training purposes, he can only postpone it. During the leave, the employment contract is suspended and all costs are covered by the training levy managed by other specific sectorial bodies.

One strong element of the legal framework for further training of workers is therefore that the individual should not bear any of its costs, whether in money terms or in personal time. Present debates between social partners however, are pointing out to three different cases. A first one when the purpose of training is the adaptation of employees to their working place or to technological evolutions : then the initiative of the training measure comes from the employer who includes it in the training plan. It will receive financial support from the levy (including the refund of the employees' time spent on training). A second case is when the employee decides to attend a training programme on its own initiative. Then he may benefit from a fund served by a special contribution : any employee may accumulate new entitlements when working and make use of them according to its needs and to the amount of money put aside. The originality of this project is that it tries to give the employee the possibility to maintain his rights throughout his professional lifetime, even with new employers. The third and new case, opens the possibility that joint-investment provisions might be adopted, by which both the employee and the employer would share the time and/or money expenses induced ("co-investissement"). This would in fact comfort the daily reality of continuing training in France. A recent new survey ("FC 2000") shows that the individual is already supporting part of its training (4% of salaried workers) even when in 20% of cases it has as a purpose the adaptation to one's own occupation. Adding to that, that a fourth of the work-related training activities of salaried employees is partly or fully undertaken outside working time.

This difficult balance between legal entitlement and real developments is a standing pitfall when trying to present one's own national system.

- **A market in training provision**

Around further training a market of its own has consolidated : both public and private training providers are free to offer training products and services. An survey dated back to 1994 has shown that in this market, community groups were predominant with about a 38 % market share. They were followed by the private market-oriented training enterprises (27%). Public sector training providers (16%) and sectorial employer-led training organisations (13%) were achieving a lower share.

The "sector" of vocational further training is both highly concentrated (16% of the firms take 85% of the turn over) and scattered in very small firms (76 % capturing 9% of the turn over).

There is a kind of partial specialisation between roughly two segments: the training for unemployed and low skilled workers which is mainly financed by public bodies and delivered by low paid trainers and training providers; the training for high-ranking employees and staff executives which is (well) paid usually by firms and other benefitors. These two sub-sectors are ruled and developing very differently.

1.3. Training or retraining of unemployed job-seekers

As for the unemployed, among many small and medium size providers offering training courses in all sort of fields, one big public supplier plays a prominent part in the market, the Association for the Vocational Training of Adults (AFPA) which provides training that can lead to nationally recognised qualifications. Following a general tendency this public agency is evolving towards more decentralised structures at a regional level (22 regions in French metropolitan territory).

1.4. Some issues for debates

Amongst the most significant reforms of these systems in view of enhancing vocational education and training throughout life, the most important one is the professionalisation of higher education.

Higher education in France evolved along two different and opposite paths. A highly selective system of vocational but still rather academic, excellence schools (the so-called "grandes écoles") produces the top executive, scientists, managers that the country needs, mainly in the private sector. An academic system within the universities delivers more general education and diploma, preparing more often for public careers (civil servants, teachers,….) or regulated professions (health, law, accounting,…).

This two-fold system is now evolving under the pressure of internal and international competition, and of reorganising towards new european standards. So that universities have opened new vocational courses at almost every level giving their students real opportunities in the private sector. At the same time the "grandes écoles" deliver more and more academic diploma (masters and doctorates), in cooperation with universities, in order to meet the needs for high ranking and sharp knowledge wanted by firms. These two systems that were fully separated are now evolving in similar directions, but in very different ways : especially the recruiting methods through very selective exams on the one end, or more diverse methods on the other. But universities are becoming more vocational, while vocational excellence schools (Grandes Ecoles) are becoming more research oriented. And both systems are reorganising within the frame of 3/5/8 new european standards.

Recently, the Lycées des Métiers (Trade High Schools) have been run on an experimental basis, aiming at enlarging the educational and training offer of the teaching establishments of the ministry of education. These trade high schools are supposed to organise their education and training supply according to a coherent set of professions (either dealing with an industry, or with connected or complementary professions). The idea is to attract not only "traditional" pupils but several kinds of attendants : scholars, students, apprentices, adult learners, and so on… This could drive vocational education towards an individual-led and modular organisation (everyone in very different situations taking courses of his choice 'à la carte') rather than a group-led and global one (coherent and standing groups taking together the same classes and passing the same exams to acquire the same diploma at the end).

As previously indicated an important and significant national bargaining about the overall organisation of vocational further training system has recently been interrupted, but will probably resume again very soon. The main sources of controversy are connected with the three questions of "joint-investment" principle, the contribution of SMEs to the training funds, and the cast between national and sectorial bargaining.

But there is rather a consensus on the diagnosis about the shortfalls of the present system. It appears to be most favourable to the best educated and poorly used by the others. So that it clearly needs to be reviewed in the direction of this group of workers.

A further issue has to do with multi-levels governance. Since a general trend towards more personalised or fine-tuned training is taking place, how may national, regional and sub-regional authorities or actors cooperate, combine their actions and decisions, in a more efficient way?

New powers and new resources have been given to decentralised public bodies or boards. How and up to which point is it good to pursue ?

This territorial question does include an other one coming up: how and up to which point does national organisation comply with european standards and methods?

An other big issue deals with the place that should be given to accreditation of prior experience in the certification system? It will be dealt with in the following.

2. Qualifications assessment and certification

France has very diverse certification systems. Despite recent changes, the spine of them all remains the diplomas' system of the ministry of education. As a whole, three certification systems cohabit : the public diplomas, the "accreditation" procedure and the industry qualifications. Recent legal developments provide for the setting up of a new national register of certifications managed by a national commission. They also comfort and enlarge a statutory right to the accreditation of prior experience.

▪ A three-fold system of certification

The first system of **national vocational diplomas** dates back to 1942, but it was not until 1963 that both general education and vocational diplomas were placed under the authority of the Ministry of Education.

The Accreditation procedure dates back to the beginning of the seventies. It entails the classification of the qualifications or certificates issued by any training organisation which requests accreditation, on the one hand in terms of different levels, on the other by profession, groups of professions or training specialities. A Technical Commission for Accreditation ["Commission technique d'homologation"] or CTH, was set up in 1972 as part of the interdepartmental committee for vocational training, social advancement and employment, thus showing the link between accreditation procedures and the whole range of measures dealing with continuing training. Accreditation procedures also apply in a considerable number of instances to the certifications received through initial training. Most ministries which grant diplomas or qualifications choose to make use, at least partly, of the accreditation procedure (Agriculture, Youth Affairs and Sport, Employment and Solidarity, Defence, Health). Accredited certifications are classified in similarity with the diplomas issued by the Ministry of

Education, which are automatically accredited (as are the engineering diplomas which are under the control of the engineering qualifications commission).

Sector or industry certification received official backing in 1986 when it was recognized that it could approve the professional experience gained in the course of a qualification contract. These contracts are part of wider measures to help integrate young people into the world of work, and as a matter of obligation they must lead to the candidate obtaining a certified qualification. Sector certifications are known under the general heading of Vocational Qualification Certificates, [Certificats de Qualification Professionnelle] or **CQP**.

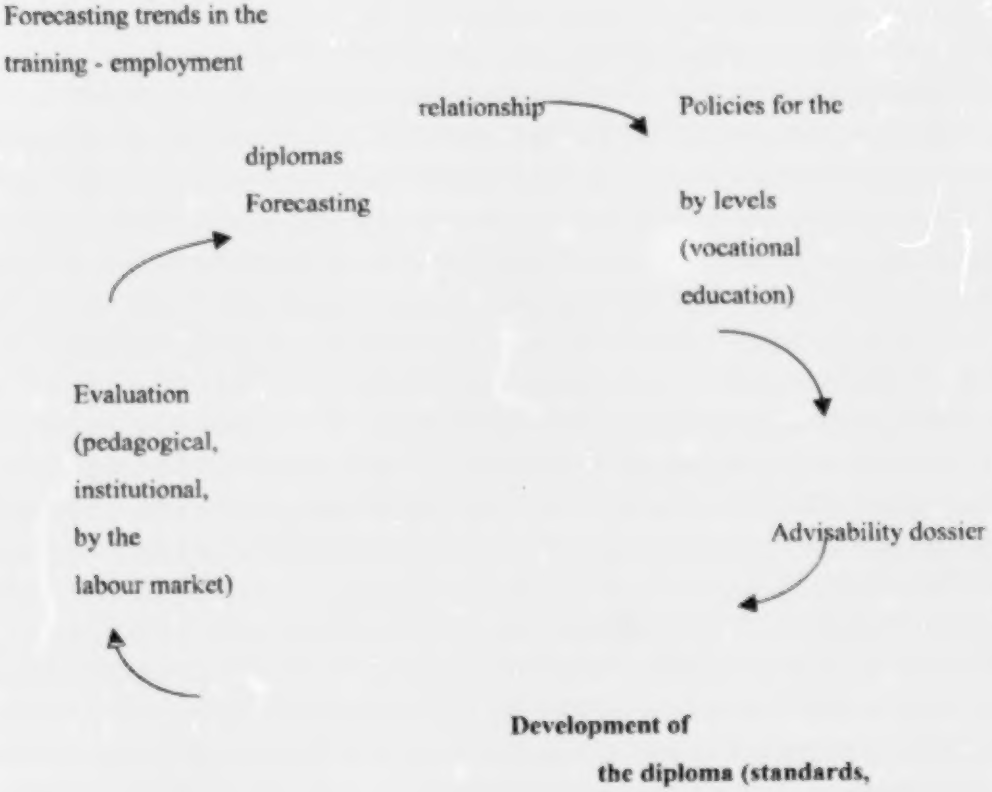
In terms of volume, the three sub-systems are very unequal. Most diplomas are delivered by the ministry of education which serves as a general reference for all other ones (especially grading them in a level scale: "bac +/- n years"). However, a still small but increasing number comes from the rest of the public sector (health, agriculture,...) or from the accreditation commission, leaving a microscopic part to the "CQP".

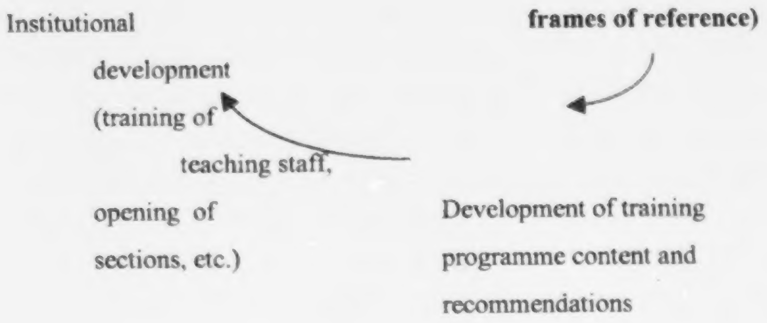
- **A specific procedure**

In 1972, the Ministry of Education has put in place sector specific bodies in charge of the creation, the updating and the possible cancellation of these qualifications. Modernised at the beginning of the 80's, these so-called consultative vocational commissions (commissions professionnelles consultatives - CPC) comprise :

- an equal number of representatives of employers and employees;
- representatives of the ministry and of Céreq;
- qualified persons belonging to either the public or private sector, selected by virtue of their occupational activities or their work. This group can include representatives of the teaching profession, of the chambers of commerce and industry, trade associations or chambers of agriculture.

A specific working procedure for these CPCs has been designed in the late 80's. It starts with an overall analysis of the foreseeable trends in the jobs contents, training and employment developing needs in the sector or in the activity. These analysis and data are presented and discussed in these commissions. Taking into account the general economy of the diploma system by the ministry of education, the CPC contracts out an advisability study, whose objective it is to inform its decision. This latter one is a " political " decision by the CPC, the next steps being rather " technical " ones. In case of a positive outcome of this study, a new qualification will be developed or improved. The first basic reference for that work is the " référentiel d'activité professionnelle " (RAP). This document defines the activities in which the people holding the qualification should be capable of engaging. It is based on an analysis of the activity and anticipates foreseeable developments in that activity. Out of its specifications, an assessment charta is determined, informing the evaluator on what to assess. It indicates the conditions and assessment indicators for the skills. Finally, a further document is drafted, that gives references to the training system, for it to support the acquisition of the required skills. The following chart pictures this process.


Forecasting trends in the
training - employment
relationship
Policies for the
diplomas
Forecasting
by levels
(vocational
education)
Evaluation
(pedagogical,
institutional,
by the
labour market)
Advisability dossier
Development of
the diploma (standards,


Institutional development (training of teaching staff, opening of sections, etc.)
frames of reference)
Development of training programme content and recommendations

THE MAIN STEPS IN DESIGNING AND IMPLEMENTING TECHNICAL AND VOCATIONAL EDUCATION

One can see that the starting point of this whole process is a strong link between occupational activity and the design of the qualification standards : those standards emphasise definitions of occupational performances, from which requirements for training are then defined. Within the French training system, such an approach has been a substantial departure from the former situation, which, proceeding in the opposite direction, started with an academic and disciplinary definition of training programme content and considered occupational activity as the application of theoretical knowledge.

These processes put in place by the Ministry of Education for the design of its qualifications cover all activities which have been parted in 20 specialised commissions corresponding to rather large industries: metals, chemicals, food, textile, transports, audio-video and communication, applied arts, trade, tourism and hotel and catering, personal care, health,…. This method, has spilled over to other ministries delivering their own qualifications, some of them covering the same industries, with almost the same people attending them. The setting-up of consultative commissions pulling together the main stakeholders, as well as the drafting of a frame of reference for the occupational activities concerned (" référentiels d'activité ") ensure also there the greatest possible proximity between workplace and training bodies (or schools). This is the case for the Employment Ministry (four commissions), the Ministries of Agriculture (one commission) , and of Youth and Sports (one commission). The Ministry for Health and

Social Affairs will soon also have finalised these organisational arrangements for its qualifications.

- **A reform to be implemented**

These evolutions are being strongly encouraged by the very new Law on " social modernisation ", that was finalised last January. With this Law, a new national directory managed by a new national commission for certifications has been created. A condition for qualifications issued by public bodies to automatically enter this directory, is that they should be designed with the double methodology of the CPC and of the " référentiel d'activité ". Instances are presently beeing put in place and procedures organised to implement.

One of the main element of this new Law is the extension and generalisation of the procedure for validating prior experience. The new provision foresees that under certain conditions, an individual having worked at least 3 years in a trade is entitled to start a procedure to obtain a full certification from either one of those certifying bodies having agreed to be part of the Directory. In this way, the value of experience (in work but also in "normal" life) for the construction of qualifications is being reinforced and put on equal footing with formal training or learning situations. It however generates some questions about the equal access to such procedure. Depending on how "learning-intense" is the environment of the individual, he or she will be more or less likely to have competencies to be validated. But one big result is that every certification agreement must detail, in its presentation draft, not only how it can be obtained : through school or academic learning but also through proved experience and competency. This might induce a kind of revolution in the French diploma and certification system. Time will tell us what use will be made of it…

3. Financing VET

The financing mechanisms of initial and of further VET differ considerably. For the former, the access route (see above) determines the financial rules applied. For the latter, firms have a legal obligation to spend yearly a pourcentage of their wage bill for further training purposes.

Contributions of the individual are quite marginal, but recent debates encourage joint-investment.

▪ Financing school-based initial vocational training

The overall yearly budget dedicated in year 2000 to teaching activities (general, technological and vocational tracks) was of 80.9 billion €uros (98,3 €uros including non-teaching expenditures). National ministries were bearing 66% of it, while 22% were supported by local or regional administrations. Families contributed to 4% and enterprises to 7%. The GDP part dedicated to education amounted to 7.1 %. Expenditure by person differs between elementary schools (4.0 € by pupil), secondary general (8.0 € by pupil) or vocational (9.0 €) schools. The same pattern is true between academic universities (6.5 € by student), technological universities (8.6 €) and the "grandes écoles" (11.5 €). These figures show that the pupil/student costs are significantly higher in the technological or vocational tracks. More generally technological and vocational education generates higher costs due to more expensive pedagogical tools, to the creation and maintenance of a net of relations with the vocational environment, and to the co-ordination it requires to continually adapt to change (technological, organisational, relational).

▪ Financing apprenticeships

The funds are provided mainly by the employers : 0.5% of the general training levy (see 1.2 above), based on the gross wage bill, are allocated to it. A "rest part" is financed by the Regional Councils, that pay it directly to the CFA (Centres de Formation des Apprentis – Centres for Apprentices' Training). The joint enveloppe is most often managed by the local chambers of trades (Chambre des Métiers).

▪ Financing further training of working adults

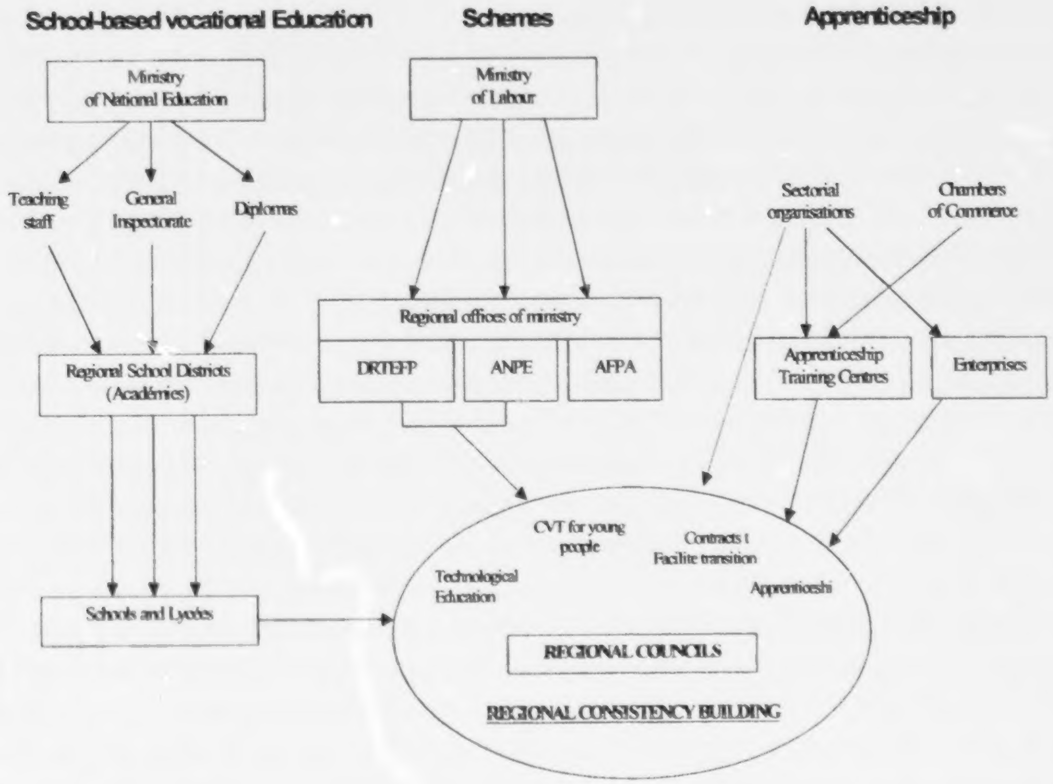
A mandatory training levy for enterprises, is fixed at 1.5% of the gross wage bill for firms with more than 10 salaried workers. Statistics show however that in year 2000, firms have directed some 3,18%, that is the double of their obligation, to training activities. Since the last five years however, this rate is slowly decreasing and seems to point to a relative decay. To set-up and manage, both financially and organisationally their training plans, enterprises are increasingly sub-contracting to sectoral organisations, the OPCA (the accredited joint collecting bodies at sectoral or regional level). Presently, these latter bodies collect 67 % of the total levy, regional bodies collecting only 5 %, and others (special for SMEs or for individuals). A recent report has analysed the functioning and the problems encountered by the OPCA. This observation points to a contradiction between high concentration of collecting and a strong tendency to decentralise more and more education and training at regional and sub-territorial levels. Industry and regional approaches and actors find themselves conflicting for the use and the appropriation of these huge financial resources. This question is all the more at stake as the collected (and mutualised) amounts are growing quickly: control and use of these important resources has mainly become an issue of power, which may hinder or at least deviate the whole organisation of the system. This has proved true during the last bargaining round. There is a debate taking place about the actual role of these collecting bodies: are they "screens" between supply and demand on the training market, or useful intermediaries organising and structuring this market or further, a good mean to reduce transaction costs, or to give information and advice to SMEs ?

The stakeholders acting in VET

The four main groups of stakeholders – the State, the social partners, the Regions and the training providers - are mostly all intervening at all levels of the VET systems : design, delivery, assessment, accreditation and financing. They do so quite differently however and their respective importance varies according to the VET segment considered.

- **In initial vocational training**

The following chart pictures the inter-connections. It helps understanding the growing importance taken by the elected Regional Councils. A further step towards cohesion should be made with the implementation of the recent projects of present Government concerning further decentralisation.


School-based vocational Education
Schemes
Apprenticeship
Ministry of National Education
Teaching staff
General Inspectorate
Diplomas
Regional School Districts (Académies)
Schools and Lycées
Ministry of Labour
Regional offices of ministry
DRTEFP
ANPE
AFPA
Sectorial organisations
Chambers of Commerce
Apprenticeship Training Centres
Enterprises
CVT for young people
Contracts t Facilite transition
Technological Education
Apprenticeshi
REGIONAL COUNCILS
REGIONAL CONSISTENCY BUILDING

- **In further vocational training**

Pointing out three great functions (rules setting, financing, implementation) it is possible to set out the role of each group of actors, as indicated in this general view :

Rules setting :

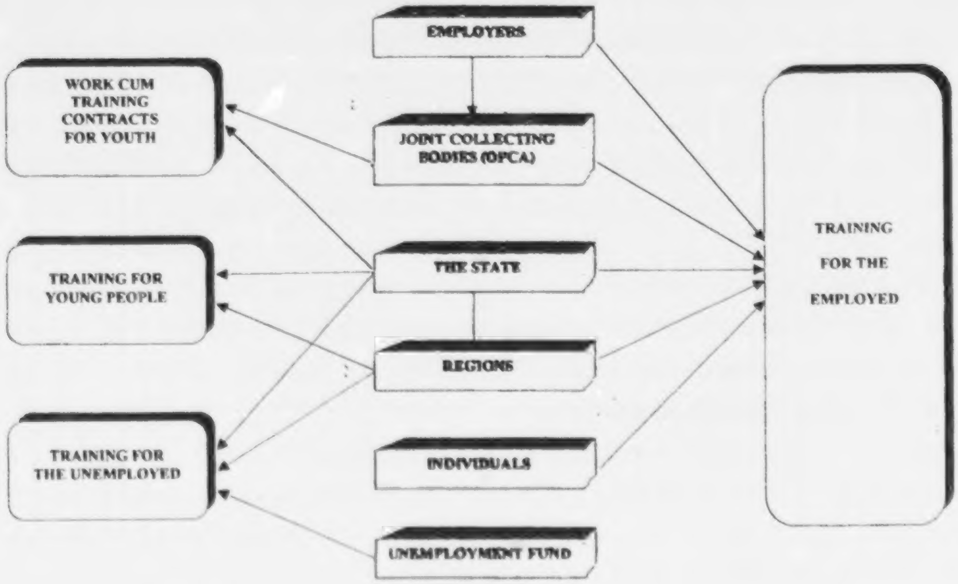
- State and Parliament
- Regions
- Social partners

The main feature to be emphasised in this area is the pursuit of a new overall agreement between social partners, with the state support, as already mentioned.

Financing

- Employers
- Accredited collecting bodies
- Public bodies
- Individuals

Their respective roles can be pictured as sketched in the following chart :


EMPLOYERS
WORK CUM TRAINING CONTRACTS FOR YOUTH
JOINT COLLECTING BODIES (OPCA)
TRAINING FOR THE EMPLOYED
TRAINING FOR YOUNG PEOPLE
THE STATE
REGIONS
TRAINING FOR THE UNEMPLOYED
INDIVIDUALS
UNEMPLOYMENT FUND

STAKEHOLDERS FINANCING CONTINUING TRAINING

Implementation

- Training providers
- Firms

BEST COPY AVAILABLE

Case 3 : Australia

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Abstract

Australia has a well-developed Vocational Education and Training (VET) system involving government, industry and varying types of providers, and meeting the needs of a diverse range of users. However, Australia's VET system is faced with considerable challenges if it is to continue to remain relevant to the needs of Australians into the 21st century. The forces of globalisation, technological change, changes in employment structures, and an ageing workforce have significant implications for the way education and training is delivered in Australia. With an emphasis on re-skilling the workforce, VET systems have a major role in facilitating lifelong learning for Australians.

This paper will report on developments in Australia's VET system, which aim to facilitate lifelong learning, and build on Australia's long tradition of open entry and adult learning. Central to these developments is the National Training Framework (NTF), which aims to assure quality within the VET sector, and also ensure that training is relevant to the needs of industry. A major part of this framework has been the introduction of a competency-based approach to training (training packages) based on the needs of industry. Coupled with the introduction of a new apprenticeship scheme based on this approach, VET is being made available to all industry sectors and the majority of employers in Australia. Additionally, Australia has a national and consistent set of qualifications issued for all post-compulsory education, and a central theme in VET is the development of learning pathways for students, allowing smooth transition between different levels of qualification within VET, and also

allowing for learning to take place across Australia's education sectors. Finally, the NTF includes a quality component that aims to provide a rigorous framework for VET providers and assessment and recognition within VET.

Although the VET system has undergone considerable reform to provide opportunities for re-skilling throughout one's lifetime, in the future, the VET sector will need to be even more flexible and be able to adapt continuously in order to consistently meet the needs of its diverse stakeholder base. The primary concept of developing learning pathways needs to be developed further. Training packages need to continuously evolve to incorporate new skill requirements such as employability or generic skills and effective mechanisms developed to allow skills of adults to be recognised and built on regardless of how these skills were acquired.

1. Introduction

Demographic Background

Australia is an island continent in the south-west pacific rim. Although covering some 9 million square kilometres (only slightly smaller than the USA), Australia is rather sparsely populated but very urbanised. As of 2001, the total population of Australia was 19.4 million. The majority of Australians live in cities that are concentrated in coastal areas (approximately 64% of the population live in capital cities). Australia also has an ageing population, although not to the extent of many European countries.

Overview of Education and Training System

Australia has a comprehensive education system that is divided into three formal sectors: schools, vocational education and training (VET) and higher education (universities). The schools sector consists of pre-school education (usually one year and not compulsory) and thirteen years of formal schooling consisting of a preparatory year, primary schooling (six or seven years) and secondary schooling (five or six years). Attendance at school is compulsory until age 15 or 16 (depending on the State or Territory).

School can be followed by a period of tertiary education in either VET or higher education. Programs of higher education typically lead to a range of Bachelor degrees and postgraduate awards. The VET sector provides a range of programs that can commence after schooling, or can commence while still at school. The VET sector also provides apprenticeships and traineeships. Programs offered by the VET sector are competency[1] based and are primarily aimed at skilling people for the workplace.

Enterprises are also a large contributor to education and training in Australia. For 1998, investment in training by enterprises was about $4.8 billion (Australian National Training Authority, 2001b). Additionally, the Adult and Community Education sector has a great diversity of training providers and organisations that deliver a variety of both vocational and non-vocational courses. During 1998, some 1.2 to 1.4 million people (around 9% of the adult population) were involved in some form of adult and community education. While the majority of students in this sector are in personal enrichment programs, around 40% are involved in VET related activities (Borthwick, Knight, Bender and Loveder, 2001).

Participation in Education and Training

Some broad indicators of education and training in Australia are provided in Table 1 below[2].

Table 1: Participation in formal education and training in 2001

Indicators	Numbers of people	Proportion of population (%)(a)
Participation in Schools	700 800	5.4
Participation in publicly funded VET(b)	1 760 000	13.1
Participation in higher education	614 400(c)	4.8

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[1] Competency refers to the 'ability to perform tasks and duties to the standard expected in employment' (National Centre for Vocational Education Research, 2002b).

[2] The figures do not include the very large numbers of workers who are engaged in on-the-job training, or who had completed work-related training courses.

(a) These figures are based on an estimated 12 870 600 people aged between 15-64 years in Australia in 2001. The total population for Australia during 2001 was estimated to be 19 387 000 people.

(b) Figure does not include privately funded students.

(c) Additionally, there were also some 112 300 overseas students.

Sources: Department of Education, Science and Training (2002) and National Centre for Vocational Education Research (2002a).

Australia has a large proportion of people of working age with non-school educational qualifications (see Table 2 below). This proportion has been gradually increasing over the last decade.

Table 2: Educational attainment of working age population (1991-2001)

	Proportion of people with a non-school qualification (per cent)					
Highest Qualification	1991	1993	1995	1997	1999	2001
Bachelor degree or above(a)	9.0	10.1	11.9	13.6	15.4	17.0
Advanced diploma or below	31.8	28.9	29.1	26.8	28.3	30.2
Total with non-school qualifications	40.8	39.1	41.0	40.4	43.7	47.2

(a) In Australia, Bachelor degree or above qualifications are usually obtained in the higher education sector.

Source: Australian Bureau of Statistics 2002

Forces for Change

Australia's VET system is faced with considerable challenges if it is to continue to remain relevant to the needs of Australians into the 21st century. Forces for change can be grouped under two main headings: demand side and supply side.

On the demand side globalisation, technological change and workplace change have had a major impact on the way work is done and the types of skills required. In particular, the advent of the knowledge economy has meant that higher level skills are required to compete successfully on the global market (Robinson, 2000). There is indeed evidence that there is an increasing demand for higher level skills in Australia in terms of distribution of occupations. For example, for the five years from 1996-2001, the percentage of people employed as managers and administrators, professionals and associate professionals/para-professionals has increased from 30.5% of the workforce in 1996 to 37.7% in 2001. Conversely, over the same period, the percentage of people employed as intermediate production and transport workers, plant and machine operators and drivers and labourers and related workers has dropped from 21.6% to 18.0% of the workforce. In particular, the percentage of labourer and related workers has dropped from 14.5% in 1996 to 9.4% in 2001 (National Centre for Vocational Education Research, 2002b). Additionally, further evidence that Australia is moving towards a knowledge-based economy can be found by looking at employment structure of Australia's economy. Maglen (2001), in a study of participation of Australian's in a global knowledge-based economy, estimated that approximately 56% of Australia's labour market could be said to be employed in global labour markets.

Additionally, Australia's service exports are increasing. This increase is an important indicator of Australia's move towards a knowledge-based economy (Department of Foreign Affairs and Trade, 2002a). For the 1999/2000 financial year, exports in services such as computing, education and financial services totalled $28.3 billion, approximately 25% of the total export market (Department of Foreign Affairs and Trade, 2002b).

Concurrent with the demand for higher skill levels is an increased requirement for information and communications technologies skills. Enterprises are becoming increasingly dependent on information and communications technology. Indeed, Australia has by world standards a very large information and communications technology market, with investment (as a percentage of GDP) ranked third in OECD countries (Department of Foreign Affairs and Trade, 2002a). Additionally, due to the level of workplace change, employers are also demanding generic skills in addition to more specific, technical skills. These generic skills, or employability skills, are designed to provide employees with greater flexibility and adaptability in meeting the needs of constant workplace change. The types of skills which come under the heading of generic or employability skills include teamwork ability, problem solving skills, the ability to use technology and communication skills (Robinson, 2000).

On the supply side, Australia has an ageing workforce (in common with many other OECD countries). Whereas in 1991, 25% of the workforce were over 45, by 2001 32% of the workforce were over 45. Furthermore, projections of Australia's population to 2020 indicate that this trend is likely to continue (National Centre for Vocational Education Research, 2002b). As such, in addition to preparing the youth of the country for work, there also needs to be an emphasis on reskilling the adult workforce (Robinson, 2000, Smith and Misko, 1999). Increasing numbers of persons obtaining university qualifications will also affect the numbers seeking vocational education and training.

2. Overview and Involvement of Stakeholders in VET

Australia has a large and complex VET system involving different levels of government and meeting the needs of a diverse range of users (Alto, Isaacs, Knight and Polestico, 2000). The system reflects Australila's federal system and is a shared responsibility between the commonwealth government and the eight state and territory governments. The major organisations that have an involvement in VET and the major components of the learning framework that underpin it are described below.

Figure 1 shows the relationships between the major organisations involved in VET in Australia.

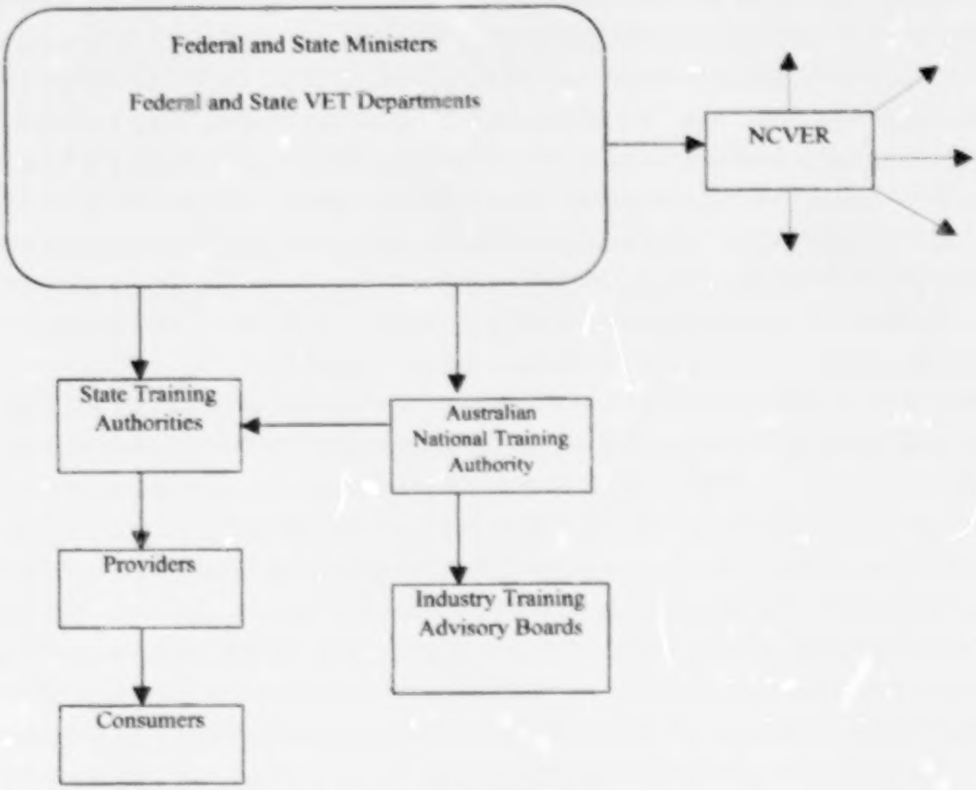
Federal and State Ministers
Federal and State VET Departments
NCVER
State Training Authorities
Australian National Training Authority
Providers
Industry Training Advisory Boards
Consumers

Figure 1: Major organisations in Australia's VET system

The central organisation in Australia's VET system is the Australian National Training Authority, which has the major responsibility for policy on VET in Australia. This organisation is also responsible for administering national programs and the funding of the VET system. It is a Commonwealth Statutory Authority established in 1992 and reports to a board. Among its core roles are the development, management and promotion of the National Training Framework. The two elements of this framework, training packages and the Australian Quality Training Framework are described in Figure 2 below. The authority also has a ministerial council that it advises on policy, strategy, goals and objectives on a national basis and on plans for the States and Territories. This ministerial council is the national decision making body for the VET sector. It comprises Commonwealth, State and Territory ministers who have the responsibility for VET. It is the body that sets overall strategic directions for the VET sector. Currently, this is set out in *A bridge to the future: Australia's national strategy for vocational education and training 1998-2003*. It outlines a vision of a skilled Australian labour force that supports internationally competitive commerce and industry and a VET system that provides individuals with opportunities to optimise their potential. The mission statement is supported by five objectives—

- equipping Australians for the world of work;
- enhancing mobility in the labour market;
- achieving equitable outcomes in VET;
- increasing investment in training; and
- maximising the value of public VET expenditure.

Below the ministerial levels are State and Territory Training Authorities. These authorities administer VET within their jurisdictional boundaries. They report on operational issues to their Minister and Parliament and on policy issues to the Australian National Training Authority's ministerial council. Importantly, these authorities are responsible for implementing the National Training Framework. They are also responsible for registering training organisations and for accrediting courses.

In addition to the above organisations, National and State and Territory Industry Training Advisory Bodies also provide advice to the VET system. Their boards are comprised of employer, employee and VET representatives. These bodies are important, as they are the major link between employers and the VET system. Their major role is to provide advice on the skills that are needed in Australian enterprises.

Another player in the system is the National Centre for Vocational Education Research. This Centre has the responsibility for the national collection of VET statistics, as well as being responsible for a program of surveys measuring graduate outcomes and employer satisfaction.

The Centre also manages a national research and evaluation program. In addition, the centre carries out its own program of research and also publishes a wide variety of material including research findings, conference papers, a magazine on training and various statistical data relating to the VET sector.

VET in Australia is delivered by a wide variety of training providers. These include both government sector providers, such as institutes of Technical and Further Education and other private sector providers such as private business colleges and enterprises providing training to employees. A feature of the sector is competition between training providers, with about 15-20% of places being contestable. The remainder is reserved for public training providers.

There is also a large variety of students participating in the VET system. Segments of students include school leavers, new entrants to the workforce, people in the workforce requiring skills upgrading and people undertaking preparatory education and training before going on to specific VET courses (Cowan, 2002).

The number of people participating in publicly funded VET has been increasing over recent years and as of 2001, the number had reached 1 756 800 (Table 3). This does not include considerable numbers of students attending privately funded institutions[3].

Table 3: Participation in formal publicly funded VET over the last 10 years

Year	Numbers of Students ('000)	As a proportion of 15-64 year olds (percentage)
1991	985.9	8.5
1992	1042.5	8.9
1993	1121.4	9.5
1994	1131.5	9.5
1995	1272.7	10.6
1996	1347.4	10.9

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[3] There is no regular statistical collection covering the private sector. It has been estimated that the private sector has similar numbers of students to the publicly funded sector (Australian National Training Authority, 1998b), although the courses tend to be less intensive.

1997	1458.6	11.8
1998	1535.2	12.2
1999	1647.2	12.7
2000	1749.4	13.2
2001	1756.8	13.1

Source: Australian Bureau of Statistics (2002)

It is useful to distinguish between the organisations having a role in VET in Australia and the learning framework. The framework shown in Figure 2 below, is are discussed in more detail in the section on the assessment and recognition system for learning and training outcomes.

Figure 2: Learning framework for VET

Australian Qualifications Framework[4]

A nationally consistent set of qualifications for all post-compulsory education in Australia

Schools sector	VET sector	Higher education sector
		Doctoral Degree
		Masters Degree
		Graduate Diploma
		Graduate Certificate
		Bachelor Degree
	Advanced Diploma	Advanced Diploma
	Diploma	Diploma
Senior Secondary Certificate of Education	Certificate IV	
	Certificate III	
	Certificate II	
	Certificate I	

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[4] Source: Australian Qualifications Framework Advisory Board (2002)

Statement of attainment (part qualification)
National Training Framework (relating to VET specifically)
Australian Quality Training Framework Nationally agreed recognition arrangements for the VET sector. It specifies the requirements for registered training organisations, the auditing of these organisations to ensure that the requirements of the framework are met and provides standards both for registered training organisations and State or Territory registering bodies.
Industry Training Packages A set of nationally endorsed standards, guidelines and qualifications for training, recognising and assessing people's skills. They are developed by industry with the aim of meeting the needs of an industry or group of industries.
Other Further Education Courses Courses and subjects (modules) accredited by State and Territory Training Authorities and formally recognised across Australia.

3. Improving Systems to Provide VET through One's Lifetime

One very noticeable aspect of Australia's VET system is its size and comprehensiveness. As noted earlier, the formal publicly funded sector trains more than 1.7 million students over a twelve month period, out of a 15-64 year old population of 12 870 600. One of the reasons it is so large is that it spans much more than initial vocational training. However, it is noticeable that its coverage of older persons has increased significantly over the last ten years or so and this trend is expected to continue. For example, whereas people over 40 comprised 18% of VET students in 1990, by 1998 they comprised 27% of VET students (Schueler, 1999).

Reforms in Australia to the VET sector have not in general explicitly focused on lifelong learning. Rather, they have been aimed at developing a high quality and responsive system to meet students' and industries' needs. Such a system needs to be able to meet the needs of students (most of whom are working) irrespective of age and employers who increasingly will need to look toward older workers as a source of new skills.

The major reforms over the last decade or so have included—

- an introduction of a competency-based approach to training;
- development of the training market, with an aim on focusing on both the needs of students and industry;
- mechanisms to enhance learning pathways;
- reform of apprenticeship training through the introduction of the New Apprenticeships scheme;
- an introduction of a national framework for quality assurance and nation-wide recognition of training providers.

While these reforms were not explicitly motivated by a lifelong learning perspective, all are consistent with it. Particularly, the reforms under the heading mechanisms to enhance learning pathways are directed at meeting the goals of students over all ages, from the last years of secondary school to those of older workers. Similarly, the reform of apprenticeships has boosted the numbers of adult apprentices.

Competency Based Training

Competency Based Training is an outcomes based approach to training focused on what students can actually do and was introduced in the late 1980s (Misko, 1999, Misko and Robinson, 2000). The emphasis is on developing skills and knowledge in the workplace. One of the features associated with this type of training is the implementation of assessment strategies based on nationally consistent industry or enterprise specific competency standards. These standards are a list of benchmarks or specifications in terms of what was expected work performance. Students were to be assessed according to these standards (Misko, 1999).

Development of the Training Market

In conjunction with the roll out of competency based training during the 1990s was the development of the training market and the establishment of competition among training providers. Traditionally, publicly funded VET has been provided by Technical and Further Education colleges and other public training providers. However, this situation is changing with a significant number of private organisations providing VET courses. Indeed, as of 2001, there were 87 government providers of VET operating in 1,322 locations, 985 community education providers and 5,645 other registered providers (National Centre for Vocational Education Research, 2002a). Nevertheless, public providers still account for the major proportion of publicly funded VET in Australia. The increased competition for funds among training providers has several espoused benefits including—

- a competitive environment focused on the needs of both individuals and industry;
- providing a greater choice of providers to both individuals and industry;
- cost efficiencies in the provision of training; and
- an expansion of areas serviced by training providers (Alto *et al.*, 2000).

Nevertheless, there have been some criticisms revolving around quality issues, with critics saying that the competition policy has been mainly focused on costs (Alto *et al.*, 2000).

Mechanisms to Enhance Learning Pathways

Associated with the aim of enhancing learning pathways are several trends, most of which are systems for providing credits to student. These trends outlined below.

Recognition of Prior Learning

Recognition of Prior Learning grants credit in a course, acknowledging a person's skills and knowledge regardless of how it was obtained. As such, this form of credit can be granted by virtue of previous formal study, training at work, work experience, life experience (such as recreational interests and voluntary work) and qualifications gained overseas (Kenyon, Saunders and Gibb, 1996). The objectives of recognition of prior learning are the elimination of duplication of education and training and an improvement in equity in accessing qualifications

(Australian Qualifications Framework Advisory Board, 1997). This form of credit was originally introduced in conjunction with the competency based approach to training in Australia (Misko and Robinson, 2000).

Since the granting of credit through recognition of prior learning is based on an individual's skills and knowledge, assessment procedures are focused on the individual and need to be done on a case by case basis. That is, the assessment needs to take into an account an individual's skills and knowledge regardless of how they were obtained (for example. formal study and experience). As a student applying for recognition of prior learning often has no formal documentation to present as evidence, the assessor needs to determine the standard and extent of evidence presented. As can be imagined, assessment of this type of credit can be a complex and time-consuming exercise. This is a deterrent to some institutions offering credit by recognition of prior learning (Misko and Robinson, 2000). Once assessed, students in the schools and higher education sectors can obtain credit for part of a qualification through recognition of prior learning. However, in the VET sector it is possible for students to be granted an entire qualification based on this form of credit (see Australian Qualifications Advisory Board, 2002). Additionally, in the VET sector students can also get statement of attainment based on recognition of prior learning. During 2001, recognition of prior learning was granted for 2.5% of all subject enrolments in VET (National Centre for Vocational Education Research, 2002a).

Credit Transfer Arrangements

These are the granting of credit in a course in which a student is enrolled for subjects already completed in previous study. As can be seen by this definition, credit transfer is not as broad ranging as recognition of prior learning. To be granted this form of credit, the previously completed study must be of at least equivalent level and content as the topics the student is seeking credit for in the new course. Students need to have documented evidence of achievement in prior studies.

According to Carnegie (2001), credit transfer can be obtained through two processes. The first process is designed around the individual student and is done on a case-by-case basis. Under this process, the student takes their prior qualification to the institution where they wish to gain credit, to see whether that qualification holds merit for the purpose of gaining credit transfer. Carnegie argues that this process is however somewhat ad hoc and can lead to inefficiencies. Preferable is a more structured process of credit transfer. This involves institutions carrying out an assessment of how components of different awards relate to one another, resulting in a more standardised and efficient process.

Credit transfer may be available to students going from senior secondary education to VET, VET to higher education and higher education to VET. In addition, credit transfer may be available between courses in the VET sector and between courses in higher education. Credit transfer arrangements are usually negotiated between institutions, however occasionally, state-level agreements may be negotiated between sectors (for example Queensland, South Australia). During 2001, credit transfer was granted for 3.5% of all subject enrolments in VET (National Centre for Vocational Education Research, 2002a).

Articulation

This process is aimed at providing a sequential pathway between courses. Under articulation arrangements, qualifications are integrated, allowing the student a smooth transition from one course to the next. This is done by agreeing on the form of linkages and credit values between the qualifications.

Qualifications that are articulated are often nested, that is, the qualifications build on each other so that the content of a lower level course is contained in the higher level course. For example, in the VET sector, a Diploma may be articulated into an Advanced Diploma. However, articulation arrangements can also be dual sector, so that for example, elements of an Advanced Diploma awarded in the VET sector can be articulated into a Bachelor degree in the higher education sector (Carnegie, 2001).

Integrated Dual Sector Awards

A more recent model is the integrated dual-sector award. This arrangement involves the VET and higher education sectors coming together in partnership to design an award. While this award is closely related to the concept of articulation, integrated dual sector awards can be undertaken concurrently as well as sequentially. That is, a qualification in the VET sector can be undertaken concurrently with one in the higher education sector. This integration of awards across sectors has obvious benefits for students by its mixing of theory and practice under one coherent structure (Carnegie, 2001). An example of an integrated dual sector award in Australia is the University of Canberra and Canberra Institute of Technology awards in design.

VET in Schools

Although much of the description above has revolved around arrangements between the VET and higher education sectors, or within the VET sector, increasingly VET topics are being made available within the school curriculum, meaning that students can combine their general school studies with vocational training. Some of these vocational studies at school can be used as credits if students decide to progress to a qualification within the VET sector. For example, if a school student were to be interested in a career in the food and hospitality industry, they may be able to undertake food and hospitality subjects at school as part of their Senior Secondary Certificate of Education, which also contribute to a certificate level qualification in the VET sector. Furthermore, students also have the possibility of starting the training component of the New Apprenticeships scheme (discussed below) while still at school.

New Apprenticeships

New Apprenticeships, which were introduced in 1998, build on Australia's long history of apprenticeships or indentured training that dates back to the last century. Australia's apprenticeship and traineeship system is based on the British model of master-apprentices. The New Apprenticeships combine work and structured training that lead to nationally recognised qualifications (see discussion of Australian Qualifications Framework later in the paper).

One of the key aims of New Apprenticeships was to widen the base of occupations covered by contracts of training. This has indeed occurred largely due to the introduction of training packages (to be discussed later). For example, whereas in 1995 almost 90% of all apprenticeships and traineeships were in the skilled trade areas, this figure had dropped to less than 50% by 2001. This is due to other occupational areas such as clerical sales and service enjoying a marked increase in the overall percentage of apprentices and trainees (7% of all apprentices and trainees in 1995 to 30% in 2000). In addition, there is also a wider age range of apprentices. Whereas in 1993 young people (under 25) comprised 93% of all apprentices and trainees, by 2000 this figure had dropped to 67%. It needs to be noted however that there is still an increase in the overall number of young people undertaking apprenticeships and traineeships, in line with an the increase of overall numbers of apprentices and trainees. In addition to these changes in composition, there is also a larger proportion of females involved in apprenticeships and traineeships than has previously been the case. While in 1995 males comprised 83% of all apprentices and trainees, this figure had dropped to 66% by 2000 (National Centre for Vocational Education Research, 2002b). This change is associated with the broader set occupations covered by the new arrangements

The New Apprenticeship scheme has a number of purported flexibilities incorporated into its design including—

- the ability to combine different amounts of on-the-job and off-the-job training;
- flexibility in the choice of registered training organisations used and as to how training is delivered (for example. classroom versus distance learning). This is known as 'user choice';
- application of training contracts to both full-time and part-time employees; and
- the possibility of commencing the training while still at school.

Financial subsidies and incentives are provided to employers of new apprenticeships (Alto *et al.*, 2000).

There has been a marked increase noticeable since the introduction of New Apprenticeships in 1998. Figures available show that as of 2000, 2.3% (295 620 people) of the working age population participated in apprenticeships or traineeships, as compared to only 1.2% (141 390) in 1995. In addition, 6.7% (141 390) of people aged 15-24 participated in apprenticeships and traineeships in 2000, as compared to only 4.8% (127 580) in 1995 (National Centre for Vocational Education Research, 2001a).

The other major recent reform, the National Training Framework, is described in the section below.

4. Assessment and Recognition System for Learning and Training Outcomes

A key nationally focused initiative that has been implemented in Australia to provide a fully integrated and quality VET system is known as the National Training Framework. This framework comprises of the Australian Quality Training Framework and training packages. Linked to these is the Australian Qualifications Framework. The major concepts and features of these arrangements are discussed below.

The Australian Quality Training Framework

The main emphasis of this framework is, through a set of nationally-agreed standards, the provision of *quality* VET services throughout Australia. The framework, which was fully implemented as of 30th June 2002, replaces what was known as the Australian Recognition Framework (Australian National Training Authority, 2001a). It—

- *raises and more clearly specifies, requirements of registered training organisations;*
- *improves auditing arrangements; and*
- *introduces standards and agreed processes for State and Territory registering/courses accrediting bodies.*

In relation to the first point, registration bodies within Australian States or Territories can register organisations under this framework for a period of five years to provide training and/or to conduct assessment services. The registered organisations (known as Registered Training

Organisations) can then issue nationally-recognised qualifications in accordance with the Australian Qualifications Framework (described in more detail below).

A second key aspect of this framework is that it aims to improve the auditing of Registered Training Organisations to ensure that they meet the requirements of the framework. State or Territory registering/course accrediting bodies will audit relevant organisations in terms of them being able to offer the services for which they are seeking accreditation. Thirdly, the framework provides nationally-agreed standards for both Registered Training Organisations and for State or Territory registering bodies. The framework builds on previous arrangements by clarifying the rights and responsibilities of all relevant parties. Additionally, the standards aim to make the auditing of the training and assessment functions of organisations more clear, transparent and consistent.

Training Packages

Training packages are *an integrated set of nationally endorsed standards, guidelines and qualifications for training, assessing and recognising people's skills, developed by industry to meet the training needs of an industry or group of industries* (National Centre for Vocational Education Research, 2000, p. 39).

A central feature of training packages is that they are based on competency standards. These standards are focused on the skills and knowledge employees need to function effectively in the workplace. Packages are composed of units of competency, which can be combined to build a nationally-recognised qualification. As such, this type of training is focused on outputs (competencies) rather than on how people should be trained. As an example, a unit of competency for the Fire Service Technician Level 1 qualification is to maintain and use portable fire-fighting equipment. Types of performance criteria used to measure competence here include items such as correctly classifying fires and confirming with relevant people when in doubt, selecting the appropriate extinguisher to attack the fire and extinguishing the fire with a minimum of secondary damage (Rutherford, 1996).

Consistent with the competency approach is that training packages are industry-specific. They are developed by industry through industry training advisory bodies, other bodies recognised by, or enterprises, so as to meet the training needs of particular industries or industry sectors. Once a training package has been developed the packages are submitted for endorsement. These components comprise competency standards, Australian Qualifications Framework qualifications for a particular industry or enterprise and assessment guidelines. However, training packages can also contain other useful support materials such as assessment tools, learning strategies and professional development resources.

The take up rate of training packages has been significant. Between 1999 and 2001 the number of students and hours associated with training packages has quadrupled as a proportion of total VET activity (National Centre for Vocational Education Research 1999-2001 national collection). As of September 2002, seventy-five training packages had been endorsed, eight of which are geared around the needs of specific enterprises (see Appendix 2).

Australian Qualifications Framework

Linked to the National Training Framework is the Australian Qualifications Framework, which is a national and consistent set of qualifications issued for all post-compulsory education, ranging from Senior Secondary School Certificates through to Doctoral degrees. It was introduced in 1995 and implemented over a five-year period. The framework is designed to recognise outcomes achieved in education and training in a consistent fashion and aims to be a flexible system allowing for articulated pathways between the sectors (refer earlier discussion on reforms to the VET sector). There are currently twelve qualifications represented under this framework (Australian Qualifications Framework Advisory Board, 2002). Figure 2 showed these qualifications grouped by sector.

One of the major aims of the Australian Qualifications Framework is to allow learners to start at a level that suits their particular needs and then build up qualifications as needed. Crossing State or Territory boundaries theoretically will not affect the person's ability to progress their qualifications. Learners also have the ability to cross between the different sectors in building their qualifications. As such, one of the main intentions of the framework is to promote learning pathways.

In VET, attainment of qualifications under the Australian Qualifications Framework is based on achieving a set of competency standards in training programs (see discussion above on training packages). Units of competency completed by students accumulate on a record of achievement and assist in allowing people to move from one qualification level to the next. However, students who complete only some of the competency standards towards a qualification are entitled to a Statement of Attainment. It is also worth noting that, as competency standards relate to skills and knowledge in the workplace, quite a lot of this training is undertaken under workplace conditions. To enable qualifications to be verified, the framework has established two public registers of authorities that are empowered to accredit and issue qualifications. The first Register relates to authorities empowered to *accredit* compulsory education and training and the second to bodies which have the authority to *issue* qualifications[3].

Issues

Despite the implementation of the National Training Framework as a vehicle to facilitate lifelong learning, it has been the subject of criticism. These criticisms centre on the competency-based approach to learning underlying the framework and ,more specifically, the training packages.

One criticism is that the packages are too narrow in the range of skills and knowledge they provide (for example, Smith, 2001). In particular, training packages are seen as being focused on technical skills. As such, some have argued for a greater component of generic or employability skills such as communication, team-work, customer service, information technology and problem solving skills to be incorporated into training packages (Ballenden, 2001).

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[3] Further details about these registers can be obtained from www.aqf.edu.au/accred.htm

Concerns have also been raised regarding the limited role of teachers and educators in the development of training packages. Concern has also been raised that the workplace assessment component of training packages may limit access and equity for some students. That is, students who are unemployed or changing careers may face difficulties in meeting the requirements of workplace assessment (Technical and Further Education Directors Australia, 2001).

Finally, there have been some tensions between VET and higher education. These largely revolve around the pedagogical differences between the sectors, with the VET sector using a competency based approach specifying outcomes and the higher education sector using a curriculum based approach specifying content. Hence, there has for example been some reluctance in granting credit transfer for students going from VET to higher education and vice-versa (Smith, 2001).

5. Financing Mechanisms for VET

VET in Australia is funded by both government and private sources. Students are also required to pay some fees. In addition industry invests a considerable amount of money in employee training.

Revenues for the publicly funded VET system in 2000 totalled approximately $4 billion (Table 4).

Table 4: Recurrent revenues for publicly funded VET for 2000

Revenue classification	$ '000	Percentage
State government	2 278.6	57.6
Commonwealth government	835.0	21.1
Fee-for-service	426.9	10.8
Student fees and charges	171.0	4.3
Ancillary trading and other	246.8	6.2

Total	**3958.2**	**100**

Source: National Centre for Vocational Education Research (2001b)

As can be seen from the table, funding for the publicly funded VET system is dominated by the States and Territories. In addition to the above amounts, there is also a considerable amount of investment in training by private enterprises. In 1998 this investment was estimated to be approximately $4.8billion (Australian National Training Authority, 2001b).

Overview of Funding Arrangements

At the provider level, State Training Authorities make funding allocations to Technical and Further Education Institutes and other public providers of VET. Some of this funding is competed for by training organisations. Both State and Commonwealth government funds are provided to the State Training Authorities by the Australian National Training Authority. The money is provided subject to approval of State and Territory training plans by the Australian National Training Authority's ministerial council.

The delivery of VET is funded on the basis of student contact hours. The number of contact hours to be delivered, areas delivered and Australian Qualifications Framework levels at which they are to be delivered are negotiated with State Training Authorities, following which a profile agreement is negotiated. Funds generally can only be used in accordance with this agreement, limiting the ability of institutions to move funds around. The age distribution of students is not a consideration in the profile agreements.

Funds are also gained through student fees. Students in the VET sector are required to pay their fees at enrolment (unless they fall into a category where they are exempted or receive a discount). These fees are set at the state and territory level and there can be considerable variations between the states. Fees are calculated per course contact hour and there is usually a maximum fee payable in any one year. Students of VET may also have to pay other fees such as student amenities fees, course material fees and enrolment fees.

Tensions in Funding Arrangements for Cross-sectoral Programs

There have however been tensions regarding the funding arrangements in terms of developing cross-sectoral programs. This is because the funding arrangements across the three education sectors (Schools, VET and higher education) are fundamentally different.

Chapman, Doughney and Watson (2000) and Watson, Wheelahan and Chapman (2001) in discussions of cross-sectoral funding models, have summarised some of the difficulties encountered because of the different funding arrangements between the university and VET sectors. These include—

- the differing accountability and reporting requirements of each sector;
- the different funding cycles and the basis for allocating funds make it difficult to plan cross-sector courses;
- industrial issues: VET and the higher education sector have different industrial awards. This means that there can be difficulties in allocating teaching staff in cross-sectoral awards;
- institutions involved in both the delivery of higher education and VET can face some difficulties because of the differing funding structures. This has implications for the development of information systems and allocations of administrative staff. The different capital funding mechanisms between the sectors can also present difficulties;
- students involved in cross-sectoral programs face different financing options. In VET students are subject to modest up-front fees, while in the higher education sector students contribute substantially to the Higher Education Contribution Scheme. However, this scheme allows for fees to be deferred until the student has the capacity to pay through the taxation system.

The VET in schools development has also led to debate about which sector should pay. In the main, funding for VET in schools comes from the schools sector. However, schools also access funds made available to State Training Authorities through the Australian National Training Authority. In addition, Registered Training Organisations involved in delivering apprenticeships and traineeships to school students access user choice funds made available to the States.

Funding Tensions within VET

Within the VET sector, the funding arrangements can also present tensions. As was mentioned, funding within the VET sector is based on student contact hours and as such, is input-based. However, the curriculum model for VET is competency based, which is an output-based system. Interestingly, while training packages have notional hours allocated to them, the whole system is based on students demonstrating competencies, not on hours of training completed. This can limit the amount of flexibility in training packages, as training providers need to show that they have used the notional hours allocated (Wheelahan, 2001).

6. Using Information and Communication Technology in VET

In recent years, information and communication technologies and the internet have become an essential feature of the workplace. New technology has also had a significant impact on VET. In particular, changes in technology have allowed greater flexibility in the way VET is delivered, with a greater emphasis on on-line learning. The way education in VET is thought of has also changed, with for example students taking a greater role in determining their learning activities and also taking a more active approach in their learning process. As such, technology has enhanced the delivery of VET and in addition has also enabled students a greater level of access (Booker, 2000). This access is particularly advantageous to older students.

The state of on-line delivery in VET in Australia is still very much in a developmental stage (Harper, Hedburg, Bennet and Lockyer, 2000). Governments have been keen to promote on-line learning and flexible delivery. A key initiative is the Australian Flexible Learning Framework[6]. Through its mission: "To help our industries and citizens make a rapid and successful transition to the information economy by adding value to Australia's VET system of flexible learning" the framework seeks to achieve—

- creative, capable people;
- supportive technological infrastructure;
- world-class on-line content development, applications and services;
- VET policies facilitating the uptake and usage of flexible learning; and

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[6] The framework was developed through collaboration with the Commonwealth, States and Territories and the Australian National Training Authority. The framework is overseen by the Flexible Learning Advisory Group. Comprising senior VET people, this advisory group advises on nation-wide issues regarding directions and priorities for flexible learning and in particular on-line learning.

- an appropriate legal and regulatory framework for flexible delivery in VET.

A variety of supporting projects are scheduled each year to assist in achieving these goals. However, the framework has already achieved results in its first two years. For example, the Flexible Learning Leaders program developed e-learning skills and knowledge of leading VET practitioners, so that they could then support training organisations in adopting flexible delivery approaches. Another example is the development of toolboxes, which are multi-media training resources to facilitate on-line delivery of VET. The toolboxes are based on accredited training programs (Australian National Training Authority, 2002a)[7].

Evaluation of the framework suggests that significant achievements have been made in three areas (Australian National Training Authority, 2002b). Firstly, it has been successful in developing VET practitioners to the extent that their skills, knowledge and confidence in using flexible learning technologies has grown considerably. Secondly, there is now a large variety of resources available to implement flexible learning. Finally, the framework has fostered the development of networks and communities of practice across Australia. The evaluation however, also points to three areas where the framework has not met its promise. Firstly, there has been insufficient involvement with industry in the framework's activities. Secondly, the framework has not achieved all of its goals (regarding technical infrastructure, VET policy and legal and regulatory environment). Finally, there has been insufficient systematic attention been given to communicating the benefits of the framework to VET stakeholders.

The National Centre for Vocational Education Research has been managing a number of projects on behalf of the Flexible Delivery Advisory Group. One recent project has attempted to address the gap in research regarding support for students undertaking on-line learning (Choy, McNickle and Clayton, 2002). The resulting report identified numerous support strategies for students centring on pre-enrolment/enrolment support, teaching/learning support and IT support. The report also developed a set of guidelines that can be regarded as a minimum for providing on-line support.

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[7] For further information on these, see http://flexiblelearning.net.au/toolbox/index.htm

Another project has examined the important issue of the cost-effectiveness of on-line learning as compared to more traditional face-to-face classroom teaching (Curtain, 2002). Overall, the research based on six case studies found that while on-line delivery approaches tended to be more effective than more traditional approaches, in some instances they were more expensive.

McKavanagh, Kanes, Beven, Cunningham and Choy (2002) looked at developing a model for evaluating web-based flexible learning. One outcome has been the development of tools to aid the evaluation of web-based flexible learning. A potential benefit of these tools is that they can assist in instructional design as well as teaching methods.

Other projects currently under-way include an investigation of the state of on-line learning in regional Australia and an investigation of the current and potential connections between e-business (the use of information technology in business environments) and on-line learning in VET.

Another important issue in on-line learning in Australia is that of access and equity. For example, households with low incomes are less likely to be able to afford up to date computers and internet access. Hence, on-line technologies may exclude students who are on low incomes or not working. Others who may be affected by access to on-line learning include people with poor information technology skills, people with poor literacy skills, people in remote areas and people with disabilities. In the context of lifelong learning, access to on-line technology is important. However, more important is that students have access to flexible modes of delivery, that is. students that are unable to access on-line courses have other learning options open to them and this has been a focus of the Australian Flexible Learning Framework (Australian National Training Authority, 2002a).

7. Conclusion

Globalisation, technological change and consequent changes in the nature of work have considerable implications for education and training systems in Australia. Demographic trends will also have important implications. Recent reforms in the VET sector, including the implementation of the National Training Framework, are aimed at providing a flexible training system that provides opportunities for re-skilling and enable lifelong learning to take place. This builds on a long tradition of provision to adult learners, as well as training prior to entry into the labour market. An important part of the system is the development of learning pathways that aim for smooth transitions between one qualification level and the next and also between the education sectors. However, many major challenges remain, including—

- continued development of cross-sectoral linkages and learning pathways between the education sectors. This may include the development of newer models of cross-sectoral linkages such as partnerships between individual institutions or between consortiums. It would be expected that the development of VET in schools will continue;
- improvement of current funding arrangements to reflect the philosophy of lifelong learning and to facilitate cross-sector linkages;
- continued development in the area of on-line learning. While much has been it is still to reach maturity in Australia. On-line learning is vital in facilitating flexible delivery that in turn is an important element in facilitating lifelong learning;
- making VET more accessible to areas that have traditionally had low levels of formal training. In particular, small business has traditionally not been a big user of formal training due to cost, questions of relevance and a concern with immediate business need. However, small business accounts for a large proportion of private sector employees in Australia. Opportunities exist for VET to forge partnerships and have a greater level of involvement with areas of employment such as small business. As an example, on-line learning could be utilised to provide short, specific training courses relevant to the needs of small business.

Finally, it is worth noting that the VET sector is looking forward actively. Ministers have agreed that it is time to develop the next national strategy for VET, to build on the current one *A Bridge to the Future 1998-2003* (Australian National Training Authority, 1998a). The Australian National Training Authority is leading a process *Shaping our Future* to *build a shared vision and direction with our clients and stakeholders across the country based on the proposition that this will contribute to the social well-being, economic success and environmental sustainability of the nation* (Australian Training, September 2002)

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Appendix 1

Glossary of Terms

ANTA *Australian National Training Authority*

This body is responsible for policy on VET in Australia. It is also is responsible for administering national programs and the funding of the VET system and the management and promotion of the National Training Framework.

AQF *Australian Qualifications Framework*

This framework is a nationally consistent set of qualifications for all post-compulsory education in Australia.

AQTF *Australian Quality Training Framework*

This is the nationally agreed recognition arrangements for the VET sector. It specifies the requirements for registered training organisations (RTO's), auditing of RTOs to ensure they meet the requirements of the AQTF and provides standards both for RTOs and State or Territory registering bodies.

CBT *Competency Based Training*

Training which is aimed at developing the skills, knowledge and attitudes that are required to meet competency standards.

Competency Standards

These are specified by industry in terms of the skills, knowledge and attitudes required for effective employment

ITABs *Industry Training Advisory Boards*

These are organisations representing a particular industry that provide advice to government on VET needs for their particular industry.

NTF *National Training Framework*

This framework is the system for national VET. It consists of the Australian Quality Training Framework and nationally endorsed Training Packages.

NTIS *National Training Information Service*

This is an on-line database (found at www.ntis.gov.au), which contains information such as details of training packages, competency standards, courses, qualifications, assessment guidelines and registered training organisations.

RTO *Registered Training Organisations*

These are organisations that are registered by State or Territory recognition authority to deliver training and/or conduct assessments. They are also registered to issue nationally recognised qualifications in accordance with the Australian Quality Training Framework.

TAFE *Technical and Further Education*

These are the major group of government funded organisations providing VET and other courses in Australia.

Training Packages

These are a set of nationally endorsed standards, guidelines and qualifications for training, recognising and assessing people's skills. They are developed by industry with the aim of meeting the needs of an industry or group of industries.

More complete glossaries can be found at www.anta.gov.au or at www.ncver.gov.au

Appendix 2

Training Package Names

Aeroskills

Agriculture

Assessment and Workplace Training

Asset Maintenance

Asset Security

Australian Meat Industry

Australian Red Cross Blood Services (CONFIDENTIAL - Not all detail is accessible)*

Automotive Industry Manufacturing

Automotive Industry Retail, Service and Repair

Black Coal

Business Services

Caravan Industry

Chemical, Hydrocarbons and Oil Refining

Civil Construction

Community Pharmacy

Community Services

Conservation and Land Management

Correctional Services

Drilling Industry

Electricity Supply Industry - Generation

Electricity Supply Industry - Transmission and Distribution

Electrotechnology Industry

Entertainment Industry

Extractive Industry

Film, TV, Radio and Multimedia

Financial Services

Floristry

Food Processing Industry

Forest and Forest Products Industry

Funeral Services

Gas Industry

General Construction

Hairdressing

Health

Horticulture

Hospitality

Information Technology

Kodak (Australasia) - (CONFIDENTIAL - Not all detail is accessible)*

Laboratory Operations

Lifts Industry

Local Government

Manufactured Mineral Products

Maritime

Metal and Engineering Industry

Metalliferous Mining

Museum and Library/Information Services

Music

National Beauty

National Community Recreation Industry

National Fitness Industry

National Outdoor Recreation Industry

National Public Services

National Sport Industry

Off-Site Construction

P & O Ports*

Plastics, Rubber and Cablemaking

Printing and Graphic Arts

Property Development and Management

Public Safety
Pulp and Paper Manufacturing Industries
Qantas - (CONFIDENTIAL - Not all detail is accessible)*
Queensland Rail - Civil Infrastructure (CONFIDENTIAL - Not all detail is accessible)*
Racing Industry
Retail
Ricegrowers' Cooperative Limited - (CONFIDENTIAL - Not all detail is accessible)*
Seafood Industry
Service Technician Portable Fire Equipment (Chubb Fire)*
Telecommunications
Textiles, Clothing and Footwear
Tourism
Transport and Distribution
Veterinary Nursing
Water Industry
Wholesale
Woolworths (CONFIDENTIAL - not all detail is accessible)*

* These packages are enterprise specific

Source: National Training Information Service (NTIS) Database. Available at: www.ntis.gov.au

Case 4 : United Kingdom

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Abstract

In the 1980s, it was clear that the UK VET system was failing. Young people were unable to find training, skill shortages were arising, businesses, the national economy and the UK's competitiveness was suffering. Since the 1980s VET in the UK has been radically reformed – changes which culminated in the Learning and Skills Act of 2000 which introduced the most radical shake-up of post-16 education and training in England and Wales since 1945.

In my presentation I will briefly examine the factors driving change in the UK VET system, how it is being improved and the role of the major actors.

The ***Department for Education and Skills (DfES)*** which forms education and training policy and approves and funds the ***Learning and Skills Council*** which funds further education colleges and the ***Sector Skills Councils*** which ***assess skills needs***. Vocational qualifications are awarded by a number of ***Awarding Bodies (ABs)*** monitored and accredited by ***Regulatory Bodies*** (eg the Qualification and Curriculum Authority).

Introduction

The vocational education and training system in the UK has undergone many changes in recent years. The primary purpose of these changes has been to improve the education and training available to young people and adults – and, particularly, to secure a system of vocational and technical education fit for the twenty-first century.

In my presentation I will briefly examine the factors driving change in the UK VET system; how the system is being improved; how it is currently organised; how learning is assessed and recognised, how the VET system is financed and how stakeholders are involved. Finally, I will look at the role of IT.

The Need for Change

Up to the late 1970s, the UK had a rigid system of schooling and training. Young people would enter the education system at about 5 years of age and change schools at about 11 years of age. The type of secondary school very much rested on the outcome of one single examination. Those who passed this examination would normally be expected to eventually go on to universities and colleges at the age of 18. For those that did not pass the exam it was assumed that, after a few years more schooling, they would leave and go straight into work. A number would win apprenticeships to train in craft skills ranging from welding to hairdressing, for example.

However, there were millions who left school with few, if any, qualifications, entering a world of work which would offer little or no training, no opportunity to develop themselves and no recognition for any competencies they did develop.

Reviews of the UK VET system in the 1980s revealed a number of weaknesses[1]:

- there was no clear pattern of vocational qualifications provision. There were overlaps, duplication and gaps in the qualifications on offer
- course content was determined by organisations that may not have had a thorough knowledge of industry. The system was "supply driven" and insufficiently relevant to work
- assessment methods such as examinations were biased towards testing the knowledge of a candidate on the day – rather than testing skills or competence over a period of time, in the workplace

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[1] Sue Trappin (2002), The UK Vocational and Education and Training System, presentation to the British Council seminar, Professional Education and Competences, 18-20 March 2002, Brazil.

- there were many barriers to access, progression and transfer of credit and a lack of flexibility
- limited take-up of vocational qualifications
- some expensive and unfocused training

It was clear that the VET system was failing. Young people were unable to find training, skill shortages were arising, businesses, the national economy and the UK's competitiveness was suffering. It was clear that something had to be done.

Improving Vocational Education and Training

Since the 1980s VET in the UK has been radically reformed. These reforms include:

- Government policies which encourage strong partnerships between employers and the world of education and training resulting in the introduction of UK-wide occupational standards.
- The replacement of most levy-supported industry training arrangements with employer led national sector skills organisations
- Development of a national qualifications framework
- Legislation to enable the delivery sector of Vet to grow and change

Moves to improve the VET system in the UK culminated in the Learning and Skills Act of 2000 which introduced the most radical shake-up of post-16 education and training in England and Wales since 1945.[2] Under the Act, planning and funding of all academic and vocational post-16 further education and training outside higher education is integrated within the Learning and Skills Council (LSC) in England.[3] The Council operates through 47 local offices and a national office in Coventry.

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[2] See http://www.legislation.hmso.gov.uk/acts/acts2000/20000021.htm

[3] There have been similar developments throughout the United Kingdom. The National Assembly for Wales has established also ELWa – Education and Learning Wales – which also includes higher education. The Scottish Parliament has launched an inquiry into post-16 provision, which has the potential for substantial proposals for change after it reports next year. The Northern Ireland Programme for Government and economic development strategy provides a set of arrangements to address supply and demand for skills. The Northern Ireland Assembly is

The LSC was given four key priorities. These are:

- encouraging young people to stay on in learning
- increasing demand for learning by adults
- maximising the contribution of education and training to economic performance
- raising standards.

The LSC is also at the forefront of other Government initiatives, such as:

- reforms to modern apprenticeships, in the form of a broader knowledge base to vocational training, an increase in the number of apprenticeships, an emphasis on growth industries, and new entitlements to modern apprenticeship places
- the promotion of new forms of vocational learning in schools, including up to 40,000 part-time vocational placements a year for 14 to 16 year olds in further education colleges
- the development of Centres of Vocational Excellence (CoVEs) in further education colleges, in specialisms such as electronics, ITC and design and technology
- staff development in further education colleges
- the establishment of at least two technology institutes in each region, as outlined in ***"The Knowledge Economy"*** White Paper of February 2001, to boost the supply of high tech skills and expand research and development[4]
- the development of closer links between education and business and of targets for improving the skills levels in the workforce.
- implementation of the Government's adult literacy and numeracy strategy, which aims to reduce the number of adults with these problems by 750,000 by 2004.

The Government accelerated the pace of reform with the announcement in June 2002 of a new strategy to raise quality, meet employers' needs and improve choice in further education and training.[5]

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currently considering a report from the Committee for Employment and Learning on education and training for industry.

[4] http://www.dti.gov.uk/opportunityforall/pages/foreword.html

The key elements of the Strategy, are:

- a fundamental review of post-16 provision in every local area to be carried out by the Learning and Skills Council (LSC), paving the way for the creation of new institutions, wider choice for learners and better training for local businesses;
- an extension of proven teaching methods and an overhaul of weak curriculum areas;
- professional development and training available for the first time for support staff with non-teaching roles;
- new targets for each college and training provider setting minimum levels of performance. Every college and provider will know what it has to achieve, with new rewards for proven excellence and firm intervention to address failure

Lifelong learning is a key part of the government's VET strategy. During the 1990s life-long learning was seen primarily as a means of addressing skills shortages to support the drive for international competitiveness. It is now also increasingly being seen as a way of tackling deep-rooted socio-economic problems in the UK.

Whether or not an individual participates in learning is a lifelong pattern, already set at school-leaving age, and intrinsically related to long-term social, economic and educational factors. There is a need to inculcate learning behaviour early on.

Organisation of VET in the UK

- The ***Department for Education and Skills (DfES)*** forms education and training policy and approves and funds the Learning and Skills Council and the Sector Skills Councils
- The ***Learning Skills Council (LSC)*** provides strategic integration, planning and funding of all post compulsory learning below higher education. The creation of the LSC in England, along with the comparable bodies in the devolved administrations, means that training now has a real skills focus.

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[5] The full text of the discussion document 'Success for all – reforming further education and training' can be found at: www.dfes.gov.uk/learning&skills

- The ***Sector Skills Councils (SSCs)*** bring together employers, unions, government and education and training providers. They assist in the development and implementation of national and regional policies on learning and skills, assess the skills needs of their sectors and develop nationally recognised occupational standards (competence standards). These define the skills needed at all levels and underpin vocational qualifications.
- The ***Awarding Bodies (ABs)*** eg Edexcel, City and Guilds, EMTA, AAT give Centre approval and qualifications. There is a wide range of vocational qualifications, at different levels, which are assessed and awarded by independent national awarding bodies with international recognition. Key Skills and N/SVQs are national qualifications awarded by a number of awarding bodies.
- ***Regulatory Bodies*** – ie the Qualification and Curriculum Authority (QCA)/Scottish Qualification Authority (SQA) – are responsible for monitoring and accreditating the qualification and quality assurance systems.
- VET is offered through a wide variety of ***Training Providers***, including Further Education colleges (FE), private training companies and by employers at the workplace. Further Education (FE) colleges are self-governing, independent organisations which have a great deal of autonomy within a highly accountable framework. Colleges have worked hard to increase student numbers and the range of their provision. Lots of training also takes place in the workplace and vocational qualifications can be achieved there.
- Training providers receiving public funds are regularly assessed through a transparent process of external inspection. ***Training Inspection Bodies*** eg Adult Learning Inspectorate (ALI) develop and implement inspection frameworks for ensuring the quality of training and the effectiveness of learning

Assessment and Recognition of Learning and Training

National Vocational Qualifications and Scottish Vocational Qualifications are based on National Occupational Standards, developed by the Sector Skills Council for a given industry sector.

They are designed for employment: the qualifications are based on assessment in the workplace or in circumstances which simulate realistic working conditions. The learning outcomes, in the form of job competencies, are the most important element in the qualifications structure.

National Vocational Qualifications provide:

- A clear, coherent and comprehensive system of vocational qualifications
- They are directly relevant to the needs of employment and the individual
- NVQs provide a statement of competence set by employers, clearly relevant to work and intended to facilitate entry into, or progression in, employment, further education and training
- They demonstrate and assess the ability to use skills and to apply knowledge and understanding to relevant tasks

NVQs are supported by infrastructures that provide continuous development, quality assurance and mechanisms for effective delivery. The responsibility for building and maintaining the National Qualifications Framework for England lies with the Qualifications and Curriculum Authority (QCA).

QCA and its partner regulatory authorities in Scotland, Wales and Northern Ireland are currently mapping all of the many different qualifications on to one framework where they will all be at one of the following levels, irrespective of whether they are vocational or not.

The national qualification framework:

- Level 1 Routine & predictable.
- Level 2 Complex or non-routine with some individual responsibility or autonomy, often involving team work.
- Level 3 Complex and non-routine. Considerable responsibility & autonomy with some control & guidance of others often required.
- Level 4 Broad range, complex and technical or professional. Responsibility for others and allocation of resources often present.

- Level 5 Substantial personal autonomy and responsibility. Analysis, diagnosis, design, planning, execution and evaluation play a large part.

The aim is for people to move between different types of qualifications throughout their working lives, always building on their existing competencies. In this way the UK is developing a coherent and transparent national framework of qualifications to guarantee quality and standards, meeting the full range of needs of learners and those who provide education, employment and training.

For the first time, young people choosing vocational study will be able to see a ladder of progression that gives structure, purpose and expectation to their lives, in the same way that a future pathway is clear to those who leave school to gain academic A levels and enter university.

The ladder of vocational progression will also lead into higher education for those who meet the required standard. Having reached level 3 through a vocational route, it will be open to young people to study for membership of a professional body or, if they wish, to move on to higher level qualifications. Choosing technical and vocational education will no longer be seen as an option which limits ambitions.

Prototypes for new, vocationally-orientated Foundation Degrees have started. They will develop employment skills alongside rigorous knowledge and theory. Many of them will be linked to key areas of the new economy: Internet computing, e-business, software engineering and other high-technology subjects. They will also be available for part-time study by people in work, and indeed, at the workplace.

The Government is also expanding apprenticeship opportunities and strengthening and reforming Modern Apprenticeships as a key option for those young people who want to earn as they learn.

Financing mechanisms for VET

In its first year of operation (2001 to 2002) the LSC had resources in excess of £5.5 billion. This was a £600 million cash increase or a 9 percent increase in real terms funding, and will enable schools, colleges and private training providers to increase participation and drive up standards. The funding allocation for 2002 to 2003 gave a further cash increase of £400 million; a further 5 percent increase in real terms. (This does not include the additional funding that the LSC will receive when it takes over responsibility for school sixth form funding.)

Involvement of stakeholders in VET

In 2001, the Government announced that it was inviting employers to set up a UK-wide network of Sector Skills Councils (SSCs) to identify skills shortages and deliver action plans to tackle them across sectors. The Sector Skills Councils are the main way employers influence the skills agenda – and replaced the NTOs – which were believed not to be providing the strategic leadership needed in the Sector. The new network of SSCs will give employers a stronger voice in the planning and delivery of learning and skills.

Each Council has the task of addressing the key concerns of its sector. Sectors have different skills needs and the Sector Skills Councils will be a reflection of this. Most importantly all will be judged by the same, measurable criteria:

- Reduction in skills gaps and shortages;
- Improved productivity and business performance;
- Increased employment across the sector's workforce; and
- Improved training frameworks and standards.

Vocational qualifications are based on competence standards identified by the SSCs.

Information and Communication Technologies

In its Green Paper, 'The Learning Age', the Government set out its vision of 'a learning society in which everyone, from whatever background, routinely expects to learn and upgrade their skills throughout life.'[6] In a series of multi-million pound initiatives such as the University for Industry, learndirect and UK Online, the Government has sought to create a learning society to make that vision possible. ICT is seen as the means of revolutionising post-compulsory learning – in particular to overcome barriers of time, place and cost – faced by the one-third of adults have not taken part in any formal learning since leaving school.

However, claims that ICT provides a new freedom to learn, which will lead to a renaissance in lifelong learning need to be treated with some caution. Research from the University of Cardiff suggested that the technology route to post-compulsory education appears to be recruiting largely the 'usual suspects'. These are younger, employed, professional, male, qualified, already learners, who have access to the technology at home.[7]

This is not to suggest ICT is having no impact at all. It can help to alter patterns of participation for some individuals. But it should ICT alone is not a universal panacea to achieving a truly inclusive 'learning society'. The Government is working to tackle the digital divide – or unequal access to IT. Half of all the first users of new UK online centres said that attending had definitely helped them secure a job, a better job or move to further training. The research also showed that UK online centres are reaching the people they were intended to help.

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[6] http://www.lifelonglearning.co.uk/greenpaper/index.htm

[7] Reported in TES FE Focus, September 24 2002.\

Case 5 : China

Reform and Development of Vocational Education in P.R.China

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Abstract

Background:

The development trend of economy and employment in China

1.VET system in China

- Different levels
- Part one: Vocational education school
- Part two: Vocational training

2. Optimize System to provide lfelong VET

- Changing environment and new challenges to VET
- The requirements for VET reform
- VET reform's Target and measures

3.Using information and communication technology(ICT) in VET

- impact of technological change on VET practices
- introduction on the project of modern long-distance vocational and adult education resource building

4. Assessment and recognition system for learning and training outcomes and

qualification system

- school assessment to heighten the "gold content" of record of formal education
- the development of vocational qualification certificates
- the combination of two certificates mentioned above

5. Financing mechanisms for VET

- financing structure and scale (structure and proportion)
- measures to broaden financing resources
- measure to improve the effectiveness and efficiency of financing usage

6. Involvement of stakeholders in VET

- government play a leading role, and multielement (industries, enterprises and other social sections) school running system
- improving government roles to reinforce government function
- giving play to industries and enterprises
- encourage private VET

1. Background - General Situation of Economic and Social development

China is a developing country with 1.3 billion population and 9.6 million square kilometers land. In recent 20years, under the policy of opening to the outside world, reforming, and developing socialist market economy system, China has made great advances in economic and social development, and in people's living standard.

1.1 The GDP of China in 2001 is 9593.3billion RMB. Compared with the last year, it has increased 7.3%. The fixed assets investment of whole society is 3689.8 billion RMB which increased 12.1% in a year. In the market, prices remain stable.

Total residents consumption increases 0.7% yearly. Total import and export in the trade reaches 509.8 billion US dollars which increased 7.5% in a year. In China, the output structure and employment structure in the agriculture, manufacture, and service continually changes as following:

	Agriculture		Manufacture		Service	
	Output %	Employment %	Output %	Employment %	Output %	Employment %
1990	27.1	60.1	41.6	21.4	31.3	18.5
1995	20.5	52.2	48.8	23.0	30.7	24.8
2000	15.9	50.0	50.9	22.5	33.3	27.5

The change of citify level:

	1995	2000	2005(expect)
Citify level	29.4%	36%	>40%

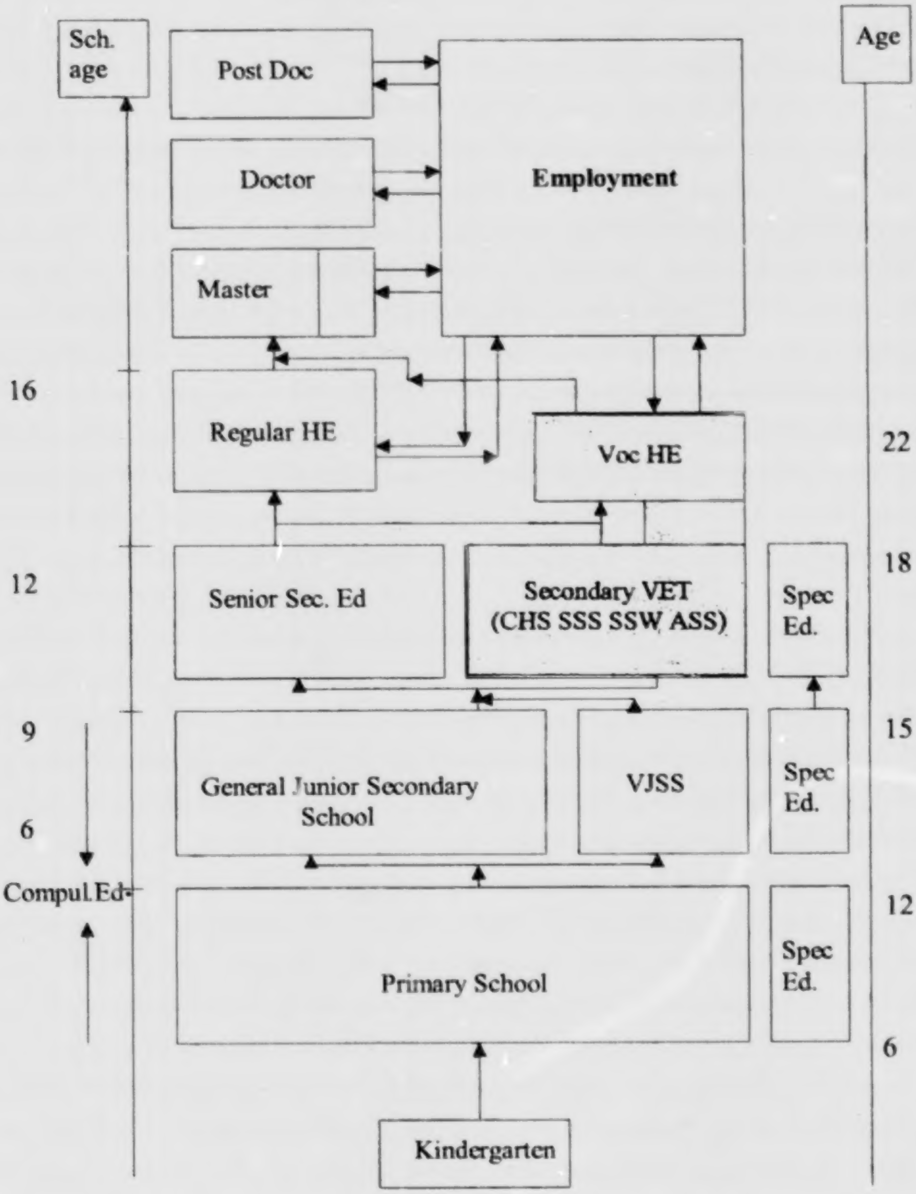
1.2 After a long time hard work, China has almost made the 9 years Compulsory Education universal. The average time a Chinese receiving education is 8 years. Since 1999, higher education in China has enlarged side so that total enrolment of universities doubled than before. It is more than 5.2 million students in colleges and universities.

Compare with developed countries, China has lower GDP and productivity. As well as the level of education especially the level of vocational and technical education. Among the enterprises' staff, 66% only finished junior high school's education. In the technical workers, only 5% is in high-level and other 35% is in middle-level. Among 400 million rural labors, those who only finishes junior high school's education even below occupied 88% by 1998. Although registered unemployment in the cities and towns is only 3.6% by 2001, in fact there are more than 5 million laid-off workers not found new job yet. Also 8 million surplus rural labors need to be transferred into city each year. The target issued by government is very hard: to improve labors' quality all-sidedly and to develop human resource. It is the key for greatly developing vocational education(VE) and training qualified applied personnel and high quality labor force that we have to change the traditional idea which pays attention to general education than VE as well to technical managers than post workers.

1.3 In the new century, China starts a new stage that whole country will go into fairly well-off society all-sidedly and go fast to modernization. Government raises a series of strategic targets of continuing development for economy and society: Taking development as topic, reform as power, structure adjustment as mainline, promote the upgrade of industry and progress of technology, expand export, develop western part of China, improve development of rural area and fasten citify, increase employment, continually implement the strategy of rejuvenating China by science and education, and improve the quality of labor force in all-round. Chairman Jiang Zemin raises a idea: human resource is the first resource. The human resource development should be taken as important strategy of China's advance. The fourth National Conference for Vocational Education was held in July, 2002.The document of "The decision of the State Council on making great efforts to push forward the reform and development of vocational education " was published in September,2002. It issues the government strategic targets and policies on VE development.

2. The systems of Chinese vocational education and training

2.1 VE is an important part of Chinese education system. It is the important channel to improve advance of economy and society and employment in China. VE consists of vocational school education and vocational training. In China, education is divided into three flows by different economic level and the level of universal education. They are post elementary school, post junior secondary school and post senior secondary school. Government pays attention to post junior secondary school level. As well, VE is divided to junior, senior, and higher levels. Government emphasizes to establish and perfect the vocational system which owns both vocational school education and vocational training, coordinates and links up inner VE and between VE and other education. See figure as following:


Sch. age
Post Doc
Doctor
Master
Employment
Age
16
Regular HE
Voc HE
22
12
Senior Sec. Ed
Secondary VET (CHS SSS SSW ASS)
Spec Ed.
18
9
General Junior Secondary School
VJSS
Spec Ed.
15
6
Compul.Ed.
Primary School
Spec Ed.
12
6
Kindergarten

note: Chinese children start their 9 year compulsory education since 6 years old. Elementary school needs 6 years, junior secondary school 3years and senior secondary school(general high school or secondary vocational school) usually is 3years. Higher VE is 2-3years and university for bachelor degree is 4 years.

2.2 Vocational school education is academic credentials education implemented in junior secondary vocational schools, senior secondary vocational schools and higher vocational schools. Secondary VE implemented in secondary vocational schools that consist of secondary technical schools(STS), secondary vocational schools(SVS) and

skilled worker's schools(SWS). Higher VE is carried out by higher professional training schools, vocational and technical colleges, professional universities and general universities.

2.2.1 Intakes and educational system

___Junior secondary VE intakes elementary school graduates for 3years study.

___Senior secondary VE intakes junior secondary school graduates for 3 years or 4 years(a few schools) study.

___Higher VE mainly intakes senior secondary school graduates or those are in the same educational level for 2-3 years study. It also intakes junior secondary school graduates for 5 years study.

2.2.2 The scope of all kinds of vocational schools

According to China's situation, government made the policy to take senior secondary VE as the core, to expand higher VE, and to maintain junior secondary VE by the local need.

By statistics of 2000, China had 1194 junior secondary vocational schools with enrollment 900 thousands, 20252 senior secondary vocational schools(including STS, SVS, SWS and adult technical schools) with total enrollment 12 844 800. In 2001, there are 386 independent vocational colleges established and owned 716 900 students. The table shows all kinds vocational schools development since 1996:

Number of schools

	1996	1998	2000	2001
Junior secondary vocational school	1534	1472	1194	1065
Senior secondary vocational school	22152	22174	20252	17770
Higher vocational colleges and universities	82	101	184	384

The total enrollments of all kinds secondary vocational schools

	1996	1998	2000	2001
Enrollment	13 200 600	14 310 800	12 844 800	11 642 300

The intakes and enrollments of independent higher vocational colleges

	1990	1996	2000	2001
Intakes	24 100	38 600	194 300	354 900
Enrollments	72 400	98 800	361 200	716 900

The proportion of secondary VE to secondary education

	Intakes(%)	Enrollment(%)
1996	64.4	63.18
1998	59.1	60.41
2000	46.56	52.11
2001	41.58	45.31

2.3 Vocational training is non-academic credentials activities with the purpose of first employment, career change or job change, or just improve vocational and technical skill. Vocational training is carry out by vocational institutes or schools. By the statistics of labor department 2001, all adult technical training in whole country is 0.1 billion person/time. 0.92 million junior high and senior high school graduates who failed to enter higher education received vocational training under the "system of labor reserve duty". There are 4.57 million people who lost their jobs(unemployed or laid-off)being trained for re-employment. Among them, there are 240 000 people received the training for "start a new business". There are 3571 employment training centers in China and 16629 training institutes which owned by social force.

In 2001, there are 5.348 million people have taken part in National Professional Technical Appraisal(NPTA) in China. Among them, 4.57 million obtained professional credentials(PC). In the 5.348 million, 445.6 million were appraised locally and others by industry.

The number of receiving PTA and obtaining(PC), 1996-2001

	1996	1998	2000	2001
Receiving PTA	2.686	3.194	3.659	4.456
Obtaining PC	2.147	2.859	3.205	3.924
Proportion (%)	79.94	89.5	87.6	88.08

In 2001, there are 3.3995 million people receiving the PTA under the government regulation for employment permit system(EPS) and 2.8864 obtained credentials.

The number of people who obtained different certificates(2001)

	Rank1(senior technician)	Rank 2 (technician)	Rank3 (senior level)	Rank4 (medium level)	Rank5 (elementar y level)
Proportion(%)	0.08	1.09	11.44	48.95	38.44
Growthrate(%) (by year)	52.17	45.32	33.08	28.27	13.13

The source of people who receiving PTA for EPS

source	PTA(person)	Proportion(%)	PC(number)	Proportion(%)
Enterprises	957080	28.15	749427	25.95
Schools	567389	16.69	496743	17.22
Society	1824719	53.68	1592494	55.17
army	50358	1.48	47706	1.66

3. Perfecting the system to offer lifelong VE and training

3.1 The challenge for Chinese VE and training in the new century

___Under the situation of fast development of higher education, many employers only unreasonably recruit high degree owners so that secondary vocational school intakes decreased. Some districts and schools are difficult in intake students.

___VE developed slowly in rural and western part of China. In general, the proportion of vocational school new students to general high school students is decreased. The enrollment of secondary vocational schools is 94 (east) and 63 (west) per 10 000 people. The condition of vocational school in western China is not good enough.

___VE reformed slowly. It does not link with market closely and has not varied patterns to run. It is not flexible enough neither high quality. It couldn't meet the need of economic and social development and life long learning.

___After the reform of government and state-owned enterprises, the system of VE has been changed. The industry adversary and enterprises involvement was weaken so that delayed advance of VE.

___Because of lacking basis and strength of low, the control for employment permit is not so strict that discourages enthusiasm of people to receive VE.

3.2 The target of reform and development of VE in the new century.

"The decision of the State Council on making great efforts to push forward the reform and development of vocational education" states: "In recent 5 years, try hard to establish modern VE system which should meet the need of socialist market economic system, link with labor market needs and employment. That system should be reasonably structured, flexible enough, opening and distinguishing, and should grow independently." Government required that VE should serve to improve quality of labor force all-round and adjustment of economic structure and technology upgrade, serve to the improvement employment and re-employment, serve to agriculture, rural area and peasants, serve to exploitation of western China. The four "serve to" above reflect the need to VE from economy and society. In order to implement the four "serve to", the target of development of VE in recent 5years are:

***Sever to adjustment of economic structure and technology upgrade.**

VE system plans to train 22million secondary vocational school graduates and 8 million higher vocational college graduates in the recent 5 years. At moment, we should pay much attention to train skilled workers especially senior skilled workers.

***Serve to the improvement employment and re-employment**

VE system each year should train 3 million people who lost job, and should offer upgrade knowledge and skills training for city workers 50 million person times each year.

***Serve to agriculture, rural area and peasants**

In 5 years, the enrollment of secondary vocational school faces to rural area should expand to 3.5 million from 2.54 million right now. The training scale of rural labor force should expand to 150 million person time each year from 87 million now. Every village should have leader person and leader family to guide and demonstrate people how to use science and technology to go to rich. Every year, more than 8 million surplus rural labor force need to be transferred into city. They must be trained before being transferred.

***Serve to exploitation of western China**

We should take vigorous action to expand the scale of VE in western China and to train applied personnel who wish to stay and contribute there. In 5years, the secondary vocational school in western China should intake 1.2 million each year so that the enrollment of secondary vocational schools could increase to 95 per 10 000 people (the average level of whole China now) from 72 this year.

3.3 The policy of perfecting VE system

3.3.1In VE system we should pay the same attention to credential education and vocational training. We will statistic the training into schooling. Vocational school could use flexible system and module to help students use part time or short periods to finish learning according to the need of subject and project.

3.3.2 We will expand the proportion of secondary vocational school graduates entering the university especially entering higher vocational school; We will expand properly the 5 year learning vocational colleges which intakes junior high school graduates. We will start the trial of offering the course that integrated VE into general education in senior high schools. Higher vocational school should take precedence to intake graduates from secondary vocational school and relieve the skill test from those who obtained medium level PC.

4. Using information and communication technology in VE and training

4.1 Significance of using information and communication technology in VE and training

China is so big that economy and education developed imbalance very much. There are some problems need to be solved: Government couldn't finance all VE and training for requirement of economy and employment; There is no modern tool and facilities to cover whole country's VE and training; Lacking of qualified teachers and resources; The teaching skill and instructional technology is out of date. If we using information and communication technology in VE and training, could be great help for the difficulties. Government made the policy to use IT in VE. The project "Education promotion action plan of facing 21st century" which approved by state council states that "modern DE project" will be carried out in China. MOE determines the project purpose in "the suggestion on develop China's modern DE": E-education(use IT in education) is an important part of national informatization. We must fasten E-education.

Using TV, radio broadcast and internet in VE and training is a world wide trend. In China, it is much needed to use IT, TV, radio broadcast and internet to build a network of national modern DE which cover most rural and remote area.

4.2 The situation of using information and communication technology(IT and CT) in VE and training

4.2.1 Ten years ago, it is called AVA that using IT and CT in VE and training. At that time, we mainly use broadcast, TV, record and VCD to instruction. Now almost all vocational school, training center, enterprise training center equipped those facilities. The department of MOE also developed AVA instructional materials. Because of popularity of internet and satellite date transmit technology, more and more IT is used in interactive distance VE and training.

4.2.2 Government made development target and plan. On June 14th, 1999, national DE project started. The long term targets is: To construct IT and CT based, digital, multimedia, interactive DE system. In the 3 years, using CERNET(China Education and Research Network) as base, to build a network of DE; to start different kinds of trials of distance; to use network in DE at university and schools. To start to develop software and information resource for DE. Government invests 2.5 billion RMB in the first stage and total investment is 18 billion RMB. By the end of 2000, the hardware construction and software development have finished. At same time, finished KU band satellite transmit system reform. Also CERNET is used in whole country.

____National website being opened. China starts "China VE and A(adult)E website(CVAE)" and "China employment training and PTA website". The first one under the lead of MOE , held by CIVTE and the second one under MOLSS. Two websites offer the platform of policy publishing, information exchanging and resource sharing for VE and training.

___Access to internet from school being implemented. Most schools has access to internet already. Some of them even use intranet or LAN to exchange and share information. For those remote areas, school could use satellite to receive the information from CCTV and share it locally. The equipment and maintains are both simple.

___Campus network is built. Most of Chinese vocational schools, training institutes have built or are building campus network. They all work well although in different scales. In some developed area such as Beijing, Shanghai, Shenzhen, Jiangsu and Shandong, campus network has been fully used to improve the quality of instruction and training, to share excellent teaching resource. It also promote teachers and trainers' instructional technology.

___The resource of distance is developed. Government starts a series projects to develop resource. Total investment 15 million RMB from MOE be used to distance resource of VE. Up to now, there are more than 100 VE on-line courses being developed. MOLSS is going to start projects to develop on-line training courses so that SWS, training center and enterprise training institute could use the courseware, software, transparency, tape, VCD and DVD to improve training qualities.

4.3 Problems

4.3.1 Up to now, VE and training mainly use AVA. It is in test stage that how to use video knowledge, stream, internet, satellite date transmit, multimedia imitate etc. in DE. Also it is in test stage that how to carry out in-time interactivity, use VOD by request etc.

4.3.2 Although government financed a lot for developing resource, the need still couldn't be met. VE and training have much more subjects than general education. It is not easy to share resource in VE and training. In a short term, there will be not enough audio-video text and multimedia software for VE and training.

4.3.3 There is short of qualified teachers and trainers for DE and distance training.

5. VE Certificates system in China

VE Certificates in China comprises certificates of schooling, certificates of occupational qualifications.

5.1 certificate of schooling

5.1.1 Certificate of schooling shows people's learning experience, in which school, what's major, how long, and learning results, it always indicates people's education level. "VE law of the P. R China" stipulates: "A students who has received education at a vocational school and passed the examinations administered by the school shall be issued a certificate of schooling in accordance with relevant State regulations. " Certificate of schooling serves as qualifying certificates for graduates of vocational schools and for trainees who have completed their vocational training programs to seek employment. According to the contents in the "Administrative regulations on school roll for secondary specialized school students" issued by MOE in 1994. Students can not get certificate of schooling unless he/she can meet the following requirements: his/her name is in the school roll, fine morality, completed all subjects required by syllabus (includes practice and graduation design), and passed examination. Certificates of schooling are issued by schools, and are confirmed by departments of educational administration in provincial, autonomous, municipalities, or the lower level department of educational administration, which get the authority.

5.1.2 To guarantee the quality of VE School's certificate of schooling, China has carried out school-running standardization and VE curriculum standardization.

---- The aims of school-running standardization are to guarantee VE schools have qualified instructional resources, administrative system, and regular sequence. One of main method to make schooling-running standardization is evaluation. To evaluate school- running conditions, teaching and learning process and educational outcomes. This evaluation also includes inner and outer efficiency evaluation. Since 1990, evaluation on secondary VE school has increased the investment on VE from government and enterprises, and has strengthened the administration and improved the efficiency. Some unqualified VE schools have been eliminated; some have been emerged after evaluation. After evaluation, MOE has chosen 30% key VE schools among all VE schools. These schools has very close relationship with local economy, enterprises are satisfied with these schools, the instructional quality in these VE school is high, the percentage of students to be employment and receive further education is also quite high, in the same time, enterprises feel satisfied with these schools. These key VE schools play exemplary role in the development of VE in China.

---- The aim of curriculum standardization is to improve instructional quality. From early years of 1990s, Secondary VE schools began to revise national majors catalogue, to increase new majors, eliminate old majors, to expand the major's scope. MOE have updated specialized curriculum standard, and updated instructional materials accordingly. At the end of 90's MOE has established industrial instructional steering commission. it has developed new specialties/ majors catalogue, which includes 254 specialties/ majors and 470 sub-specialties/majors. The standard of 23 basic subjects and basic specialized subjects has been updated, and also has developed 1000 programs for 83 majors. Pillar industries in China have big demand for these 83 majors, most of students in VE schools choose to learn these majors, and these majors have the character of wide coverage.

5.2 Certificates of occupational qualifications.

5.2.1 China has carried out Certificates of occupational qualifications system since early years of 1990. The "Occupational qualification certificate" issued jointly by Ministry of Labor and Ministry of Personnel in 1994, it put forward: "Occupational qualification comprises of two kinds. The first kind is a qualification for obtaining employment, which includes basic requirements for knowledge, skill and competency, and the second kind is a qualification for the essential requirements for these occupations which are universal, of significance, bear on public benefits, government carry out permitting system for these occupation. People can not open his/her own business or to get employment in these occupations mentioned above without the second kind of qualification. The institutes of verification affirmed by government, evaluate and verify people's occupational qualification according to national occupational skill standards and requirements for employment, and to issue national occupational qualification certificates. China started to implement "two certificates " system in VE schools. A VE student should get not only certificate of schooling but also certificate of occupational qualification from 1995. This is very important strategy to make VE meet the requirements of socialism market economy for talents, and to improve the quality of instruction.

5.2.2 Verification system for occupational skills

----There are 5 levels in national occupational qualification certificate system:

Level 5 (primary), level 4 (middle), level 3 (higher), level 2 (technician), and level 1 (higher technician)

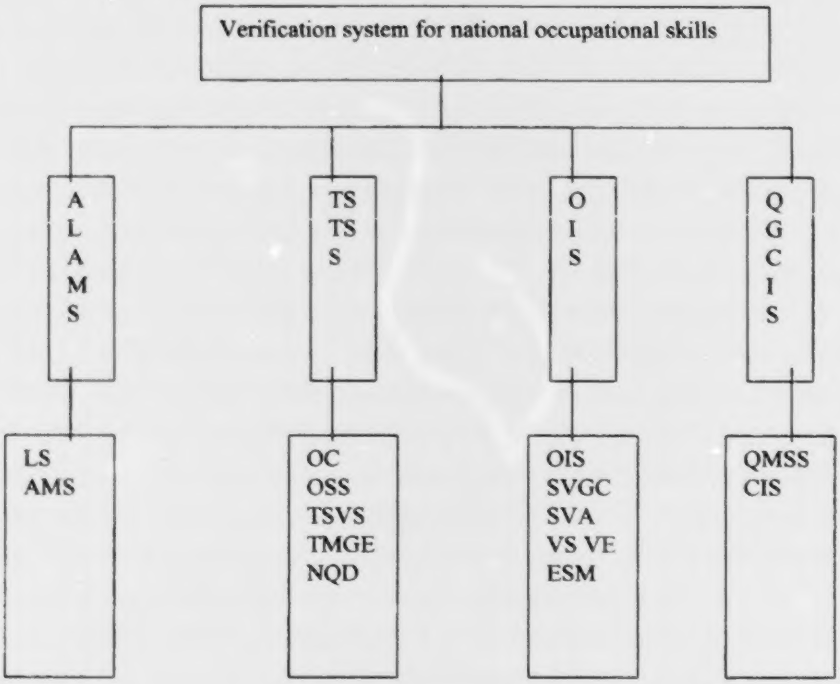
---- Verification system for national occupational skills can be divided into 4 sub-system, and 14 working stages:

First, administrative legislation and administrative management system (ALAMS) include law and regulation system(LRS)administrative management system(AMS);

Second, technical standard and technical support system (TSTSS) include occupation classification(OC),occupational skill standard(OSS), training syllabus and verification standard(TSVS), training materials and guidance for examination(TMGE), national question database(NQD).

Third, organization and implementation system (OIS) include skill verification guidance center(SVGC), skill verification agency(SVA), verification staff(VS), verification experts(VE), examination system and methods(ESM).

Fourth, quality guarantee and certificates issue system (QGCIS) includes quality monitoring and supervises system (QMSS)and certificate issuing system(CIS).


Verification system for national occupational skills
ALAMS
TSTSS
OIS
QGCIS
LS
AMS
OC
OSS
TSVS
TMGE
NQD
OIS
SVGC
SVA
VS VE
ESM
QMSS
CIS

----Basic characteristics of occupational verification system:

- from the eye of system , it belongs to national certificate system;
- form the eye of form , it belongs to the third side verification;
- from the eye of examination nature, it belongs to the examination of standard reference;
- from the eye of contents, it belongs to the occupation orientation.

To implement occupational qualification certificates system in VE system, is a strategic measures of human resource development, it helps to form VE instruction character, and is beneficial for students to be employed. We need to broaden the scope of verified occupations, these occupations, and the new and expanding occupations, recombination occupations, higher shill occupations, for instance, should be verified in the occupational verification system.

6. VE investment system

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6.1 The current situation of VE finance: According to the regulations in "VE law of P. R China", the main resources of finance of VE come from:

- Government finance: pay in full the average expenses for the students
- Enterprise finances: enterprise shall bear the expenses for the vocational education of its own employees and of the persons it plans to employ.
- Local surcharges
- Students: VE students should pay tuition, different major charges differently.
- Social donations: the donations from enterprises, institutions, non-governmental organizations, other public organization, and individual citizens.
- The earnings derived by vocational schools from running enterprises or providing social services.

The total national finance of VE in 2000 is RMB 4076.4 billion.

Up to now, the VE finance system with the government budget finance investment playing the main role, and with multiple avenues for developing vocational education supplement. But now VE finance faces the following problems:

- The absolute amount of VE finance has increased in recent years, but the percentage of secondary VE finance in the Education budget is small, and has decreased, the percentage is from 11.5% in 1996 decreased to 8.4% in 2000.
- The finance of enterprises for VE is becoming smaller and smaller. The amount is RMB 3.2 billion in 1997, but it became RMB 1.7 billion in 2000. In the same time, the amount of non-government VE finance has decreased form RMB0.383 billion to RMB 0.83.
- The tuition of VE is not small, some students in rural areas is hard to pay it.

6.2 New measures to resolve VE finance problems

The Fourth National Conference put forward the following new measures to resolve the problems of lack of VE finance:

- Government of different levels decides VE school finances standard, and urge VE schools' runner to pay in full the average expenses for the students in accordance with law. In the same time, government must guarantee VE finance to increase in its own finance budget.

- The percentage of VE finance in cities should not be less than 15%, in these regions which have fulfilled 9 year compulsory education should not be less than 20%.
- 1.5% of total wages of all employees in all kinds of enterprises should be used for education and training. In enterprises, which require high qualification for employees, have heavy burden of training tasks, in the same time have good economic benefit, the percentage could be up to 2.5%, and this finance should be counted as cost. Government above county level has the right to collect VE finance from o enterprises, which don't provide VE and training; the collecting finance will be used for local VE education.
- Encourage domestic and international organizations and individuals to make donation to aid VE, the donations of education should favor for VE.
- Government encourages financial institutions to support the development of VE by providing loans. Financial institutions should put VE support program into policy loans programs, provide loans for VE students from poor family, and also provide loans for VE students to open his/her own business.

On one hand, China take measures to increase VE investment, on the other hand, share system should be established to improve the efficiency of VE finance.

- To increase the finance percentage that enterprises bear according to the rule of "Beneficiary share".
- To bring public finance into play to maintain education fair, special budget in central finance will favor rural, west region, hard industries and students from poor family.
- To improve the efficiency of finance. For example, provide aid for not only organizations but also individual, not only government schools, but also non-government schools, not only VET development, but also VE purchase by government and enterprises.

7. VET Participation by different Stakeholders

7.1 Government plays a leading role, industry, enterprise, and social participation

"VE law of P. R China" stipulates "Governments at or above the county level shall establish vocational schools and vocational training institutions which serve as mainstay and play exemplary role. These kinds of VE schools and training institutions should provide guidance and assistance to those vocational schools and vocational training institutions established in accordance with law by rural communities and other public organizations, as well as individual citizens." "Enterprises shall, in light of its actual conditions, provide systematic vocational education and training for its own employees and for the persons to be employed". "State encourages institutions, non-governmental organizations, other public organizations and individual citizens to establish vocational schools and vocational training institutions in accordance with relevant State regulations. " With the diversification of economic ownership in China, system of establishing VE schools by economic multi-elements, and with the secondary VE as the mainstay, has been primarily established in P. R China.

System of establishing VE schools by Economic Multi-Elements

	Schools	Percentage
Government departments of education	9124	61%
Other industrial departments	3434	23%
Enterprises	1594	11%
Organizations and citizens	778	5%
Total	14930	100%

The problems faced by VE are: the percentage of VE established by enterprises and industries is too small, and there is a trend of this percentage is decreasing, the responsibilities and rights of stakeholders has been weaken; the percentage of VE operated by non-government is also small, and is shrinking. The main reasons are: ⅰ.In the transition process, enterprises are facing lots of difficulties, it's hard for them to perform their responsibilities of operating VE; ⅱ.The industrial organization is still less developed, it can not give a full play in the development of VE; ⅲ. The strength of the government take the whole situation into account and plan accordingly is not enough, the system of arousing the enthusiasm of organizations and citizens to run VE has not been established, and the VE law in P. R China has not been completely carried out.

7.2 The measures of improve the reform on VE administrative system for school running

7.2.1 Strengthen the overall administration if people's government at different levels

---- To establish the administrative system, which government makes overall plan with non-government participation, the main responsibilities of VE running is on the local government, VE in different level administrate by different levels government. MOE is in charge of overall plan of VE, and macro administration. Other ministries, MOSSL, for example, are in responsible for VE under its own responsible scope.

---- Governments at or above county level, should lay down policies in accordance with the local economical practice, should resolve VE problems, and should establish exemplary VE schools.

---- Strengthen local government's VE responsibilities, Should give irreplaceable full play to local government in the aspect of developing program, raising funds, mobilizing non-government organizations and citizens to operate VE, etc.

7.2.2 to give play to industrial administrative departments and industrial organizations in the development of VE

---- Industrial departments should maintain the function of coordination and vocational guidance should continue to run well VE schools and training institutes.

---- Mandated by government in responsible for VE, Industrial organizations forecast industrial human resource, formulate VE and training programme, provide industrial guidance, verify vocational skills, and participate in teaching materials building and teacher training. They can establish vocational schools and training organization.

7.2.3 to give play to enterprises in the development of VE

---- Enterprises must provide VE and vocational training in accordance with real demand; strengthen train for forefront staff and workers, job-transfer staff and workers. Enterprises should take vigorous action to provide VE and training facing society.

---- To strengthen cooperation with VE School to run VE in various types, enterprises should provide part-time teacher, practical workshop and facilities for VE. Some enterprises with good conditions can establish Vocational and Technical College, independently or with other higher institutes.

----- Relying on vocational schools and training institutes, middle or small size enterprises should implement training for its' own employees.

7.2.4 Government encourage the VE development of non-government

---- Non-benefit and non-government VEschools, enjoy preferential policy of public welfare;

---- Local government and other organizations can support non-government VE schools by hiring idle assets.

---- Teachers and students in non- government VE schools, enjoy equal rights with that in public VE schools.

Case 6 : Japan

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Abstract

As the Japanese economy has been experiencing a long and serious plight, various new policies for its structural reform, replacing a traditional gross demand management policy, are being developed for its recovery and continuous prosperity. Accelerating the structural reform and the shift of industrial structure would activate workforce transfer.

It is included in significant political issues that the labour market should be functional enough for smooth support for re-entry into employment and the infrastructure of the labour market should be organized to avoid a mismatch between labour supply and demand.

It is important to make information relating to the labour market accessible from companies and workers through internet or some other appropriate way and enable workers to recognize their occupational ability level and obtain education and training necessary to build up careers along the way of their occupational life.

Related measures to development of employee's occupational ability have been developed mainly from the following five points of view:

1. Reinforcement of the function to adjust labour supply-demand
2. Lifelong support for career improvement
3. Collection of information on development of employee's occupational ability and expansion of its provider system
4. Arrangement of standards and plans for reasonable evaluation of occupational ability

5. Secure opportunity of education and training for development of employee's ability

1. Recent economic and employment trends

(1) Japanese economy on course for recovery

The Japanese economy has continued to be depressed since the collapse of the bubble in 1992 and, even though it has turned slightly upward, conditions remain severe. Gross domestic product (GDP) figures for the period April ~ June 2002 released by the Cabinet Office at the end of August showed an increase of 0.5% (an increase of 1.9% on a yearly basis) over the previous year in real terms excluding the effect of price changes due to brisk exports. This represented a positive growth for the first time in five quarters, but in terms of nominal GDP, this was a negative growth of 0.2% (minus 0.8% on a yearly basis) due to progress in deflation. Domestic demand was generally sluggish, with capital investment declining by 0.5% compared with the previous quarter and recorded negative growth for the sixth consecutive quarter. Industrial production is also sluggish with the index recording 96.2 on the basis of 100 for 1995.

Unemployment increased by 220,000 to 3,520,000 compared with July in the previous year, recording an increase for the 16th consecutive month, with the unemployment rate remaining high at 5.4% as shown in Figure 1. Voluntarily unemployment has reached 1,190,000 outnumbering involuntary unemployment caused by corporate bankruptcy, dismissal, etc., who totaled 1,080,000. Characteristic features in recent years include a high unemployment rate for young people among whom the voluntary job separation/switch rate is high, an increase in the unemployment rate for middle-aged and elderly householders, and increases in long-term (1 year or longer) unemployment.

Under these circumstances, the government has recently moved toward strengthening industrial policy, employment creation policy, etc., from the labor demand side given that it is difficult to get out of the sluggish economy merely by proceeding with reform on the labor supply side.

The number of new openings for July, which serves as a leading indicator of the employment situation, increased by 4.6% compared with the corresponding month in the previous year, recording an increase for the first time in 12 months. This was mainly due to the manufacturing industry, where vacancies were up 7.3%, marking an increase for the first time in 16 months. The service industry also posted a substantial increase of 10.2%, indicating a gradual recovery of the situation. Stock prices have dropped below the level in the latter half of the 1980s against a background of distrust of US stock markets, with the Enron incident as a turning point, and the delay in disposal of bad loans by banks in the midst of a deflationary economy. Bank-owned stock valuations are depressed as a consequence, constituting a destabilization factor in the financial system.

(2) Macroeconomic trends in the employment structure

In terms of long-term changes in the employment structure, as is shown in Figure 2, the ratio of those employed in the agricultural and forestry industry has declined substantially, whilst that in the service industry has gradually increased. The ratio for the manufacturing industry increased till the first oil crisis, but has since been on a continuous, gradual decline. Employment in the manufacturing industry, which was 15,690,000 in 1992, was 12,840,000 in 2001 representing a decline by 2,850,000 in a decade. This drop in employment in the manufacturing industry is partly due to the fact that the shift to overseas production is progressing rapidly and that outsourcing using contractors in the service industry is being actively pursued according to industrial classification.

Such rapid change in the industry-by-industry employment structure has led to rapid changes in the employment structure in terms of job type (see Figure 3). In particular, those employed in the agricultural and forestry industry decreased substantially to 4.8% in 2001. Partly due to the depression in the manufacturing industry, employment in the production process and numbers of construction workers continue to decrease gradually. Moreover, growth in the numbers of office workers, which had been gradually increasing till the 1980s, stagnated in the 1990s partly due to the impact of technological innovation. On the other hand, while total employment is somewhat on the decline, employment in specialized/technical work and in the security and services industries are increasing steadily. It can be said, in particular, that improved rates of university/junior college attendance have had a major impact on the increase in employment in specialized/technical fields. Incidentally, the university/junior college attendance rate is a little below 50%. The employment rate in this category with an academic background of graduation from senior high school or lower has declined to about 20%.

While economic growth remains sluggish, diversification of employment types is accelerating due to the fact that: <1> a move is gathering momentum to limit total personnel costs by combining several labor forces, <2> female participation in the labor force is increasing and the number opting to work part-time, for whom childcare is easier, is on the increase, <3> the trend toward a service/software economy requires a labor force that can respond flexibly to changes in labor demand, <4> the level of academic qualifications is increasing as are numbers wanting to work freelance.

As is shown in Table 1, non-permanent employees account for as much as 27.5% of employees in companies employing 5 persons or more; in the case of women, in particular, almost half, or 47%, work as non-permanent employees. There is more variation in the degree of diversification of employment types among industries than according to the size of a company. In the wholesale/retail industry and restaurant trade, which are highly dependent on part-time workers, non-permanent employees account for 43.0%. Incidentally, large numbers of temporary workers are typically employed in the financial/insurance industry.

Partly due to the fact that the types of jobs available to temporary workers have been expanded through deregulation, temporary workers numbered about 1,390,000 in fiscal 2000 (an increase of 29.8% from the previous year) which is about 540,000 in full-time equivalent terms (an increase of 36.1% from the previous year).

(3) Infrastructure development for strengthening labor market functions

An increase in the number of those leaving/switching jobs, as well as diversification in employment types, that accompanies such change in the industrial structure increases the necessity for socialization of the education/training system. Various economic structural reform policies have been introduced in order to induce sustainable economic recovery. Since acceleration of such policies enhances labor mobility, it is now an important policy task to support smooth reemployment by making the labor market function effectively, and to promote infrastructure development in the labor market, including the vocational training system, in order to eliminate any mismatch between labor supply and demand.

To wit, it is essential to render it possible for workers and companies to obtain sufficient information on the labor market through the Internet, etc., and for workers to development their careers by undertaking the education/training necessary for lifelong occupation while realizing the level of their own vocational ability.

For this purpose, infrastructure development focused on the following five policy tasks is being given priority in the administration of employment security and human resources development:

<1> Strengthening of the labor supply and demand adjustment function
Building of "Job Information Net," an employment information system based on cooperation between the government and the private sector, utilization of planned placement dispatch, thorough publicizing of the private placement business system within private education institutions, and so forth;

<2> Lifelong support for career development
Development of career consultancy techniques, fostering of human resources responsible for career development support, and provision of information/subsidies for promoting in-house career development support;

<3> Expansion/improvement of a system for collection and provision of information related to vocational ability development
Provision of basic information concerning jobs, information on trends in the needs for human resources and education/training courses, information on ability evaluation, and so forth;

<4> Development of standards and a system for proper evaluation of vocational ability
Expansion/improvement and development of the national trade skill test system utilizing contracts to the private sector, establishment of vocational ability standards covering white-collar workers, establishment of practical vocational ability evaluation

techniques, and so forth;

<5> Securing of education/training opportunities necessary for skills development Promotion of establishment of new education/training courses in the private sector, securing of high-level education/training opportunities in collaboration with institutions of higher education, etc., effective implementation of public vocational training by identifying the needs, policy evaluation, etc., and so forth.

2. Priority measures in areas related to private and public vocational training

(1) Priority measures related to human resources development

There are 305 public vocational training facilities, of which 10 are polytechnic colleges, 8 are polytechnic junior colleges, 60 are polytechnic centers, 207 are prefectural human resources development centers, 19 are national and prefectural human resources development centers for the disabled, and one is polytechnic university for training instructors.

The total budget for the Human Resources Development Bureau, Ministry of Health, Labor and Welfare, in fiscal 2002 is 208.6 billion yen, with priority in human resources development measures given to the promotion of vocational training accurately corresponding to structural reform (148.8 billion yen).

In terms of vocational training at public vocational training facilities by year and by type of trainees, in fiscal 2001 there were 380,000 displaced workers, 400,000 in employment and 30,000 college graduates, totaling 810,000; plans for 2002 include 530,000 displaced workers, 400,000 in employment, and 30,000 college graduates, with a total of 960,000, thereby endeavoring to substantially strengthen vocational training for displaced workers. With respect to the training of those who left employment in 2000, 70,000 received a total of 2,800 facility-based training courses; 170,000 received a total of 8,000 contract training courses at 1,600 institutions, and 60% of contract training was performed at schools in the "miscellaneous" category or at special training schools.

The contents, including the budget, of the 4 areas of vocational training to which priority has been given in recent years are as follows:

<1> A budget of 19.3 billion yen has been allocated to provide education/training to 200,000 people (planned) with the aim of eliminating mismatch deriving from the vocational skills of middle-aged and elderly white-collar workers leaving employment.

Measures, such as contract training using universities/graduate schools, NPOs, employers, etc., and the development of customized training courses corresponding to the needs of companies for workers, are being adopted.

<2> 7.2 billion yen has been appropriated for the development of diversified IT-related skills

Education/training to augment the numbers of white-collar workers employed in electronic commerce, advanced information technology technicians and high-level technical/skill personnel in areas that combine IT and goods production. With the aim of eliminating any employment mismatch due to deficiency in IT skills: vocational training utilizing private institutions (displaced workers: 200,000), skill acquisition support utilizing terminals for self-teaching and distance education/training systems (500,000 persons), and so forth.

<3> 57.5 billion yen for other vocational training in new/growth areas, etc., (548,000 persons)

This is implemented at public human resources development facilities for those leaving/switching employment, as well as those in employment; efforts are being made to diversify/upgrade training courses with priority given to new/growth areas, etc. In particular, training opportunities are being expanded and improved for those leaving/switching employment by opening Saturday/Sunday and night courses and introducing flexibility into course enrollment schedules.

<4> Vocational training is provided at private education/training institutions with the aim of enabling those who have graduated from senior high schools, universities, etc., but not yet found employment to obtain the necessary practical skills; a budget of 880 million yen has been appropriated targeting 4,000 persons.

The following indicates characteristic human resources development measures, aside from the above-mentioned four areas.

Public Employment Security Offices recommend vocational training when they have judged that the reason for difficulty in finding reemployment is lack of skill on the part of job applicants. Job applicants can receive extended provision of unemployment benefits as long as they are receiving vocational training. However, it remains hard to find reemployment even after completing training if the training course does not fully factor in the supply and demand situation in the labor market. For this reason, efforts are being made to develop a system of providing guidance and support with respect to the entire process, from the selection of training courses to employment of those leaving/switching employment. More specifically, steps have been taken to provide those leaving/switching employment with detailed guidance and support, such as formulation of skills development plans, by posting about 1,000 vocational skills development advisers who support career development at Public Employment Security Offices, etc. (a budget of 5.2 billion yen). Training of career consultants able to provide such guidance service is being implemented simultaneously. Moreover, a budget of 1.7 billion yen has been appropriated to develop a placement-linked, continuous support system for the reemployment of displaced employees.

Furthermore, based on the policy of the Office for Structural Reform of Industries and Employment of the Cabinet Office, it has been decided to promote the "leading measures to create a major force in human resources", supervised by the Ministry of Health, Labor and Welfare. In the transition to a knowledge-based economy, the necessity of fostering human resources equipped with flexible, high-quality technological skills that generate high added value has increased. In order to foster human resources equipped with such skills, it is necessary for human resources development administration, education administration, etc., to work together. It is not only essential to develop opportunities for high-level professional reeducation of adults and to develop the skills of those in employment, but also to develop a continuous education/training system, including home/community/school education from childhood, to awaken job consciousness and to create an environment that makes this possible. In order to implement and promote such comprehensive education/training, the General Conference on the Creation of a Major Force in Human Resources (Jinzai-taikoku-souzou-sougou-kaigi) was established in 2001 as a place of liaison/consultation for concerned parties at the national level. Under the Conference, meetings are held with concerned parties from business, government and academic circles including universities, graduate schools, NPOs, etc., to formulate guidelines for the overall promotion of education/training, such as the development of opportunities for recurrent education, support for career development, and so forth. Regional councils on the creation of a major force in human resources (Jinzai-taikoku-souzou-chiiki-kyougikai) are to be established, comprising members from local business, universities/graduate schools and NPOs, to develop education/training courses for adults utilizing universities/graduate schools, etc., at the regional level and to establish concrete guidelines for comprehensively utilizing regional vocational training institutions (with a budget of 10.6 billion yen for fiscal 2002). The project will start in earnest in autumn in fiscal 2002.

(2) Status of and recent trends in private education/training

According to the Basic Survey on Skills Development (survey in fiscal 2001) (1), (2) by the Ministry of Health, Labor and Welfare, 22.9% of companies included an organization specialized in education/training "within the company/subsidiary company/affiliated company". Incidentally, almost two thirds (64.9%) of the companies implemented off-the-job training for permanent employees. Training matter included "functional training" (65.9%), "stratified training" (60.9%), "training for acquisition of qualifications" (58.2%) and "purpose/task-based training" (52.7%). In all categories, training was conducted by the education department of the head office in many instances. This trend was particularly conspicuous in "stratified training," while "language training" and "functional training" were left to a line department or a place of business. With respect to off-the-job training conducted under the supervision of the head office, the education/training cost was 24,600 yen per permanent employee (including the direct cost alone and excluding opportunity costs arising from the trainee's leaving the place of work during the training period; training costs at the operational department level and within the functional department are excluded).

With regard to policies in future education/training, many companies attached importance to "purpose/task-based training" (42.4% for "attach more importance") and "functional training" (42.0% for the same), followed by "stratified training" (33.9% for the same); while the needs for "study at a university, etc., at home or abroad" (4.1% for the same) were not substantial.

At the individual level, 35.4% of employees received "off-the-job training." With regard to the percentage of course participation, "functional training" was the highest with 41.2%, followed by "purpose/task-based training" (34.2%), "training for qualification acquisition" (28.6%), "stratified training" (21.3%) and "training related to OA and computer" (19.6%). 37.3% of employees performed "self-development"; in terms of objectives (multiple answers), the majority cited "to acquire the knowledge/skills necessary for my current job" (79.5%), followed by "in anticipation of future work and upgrading of career" (38.8%) and "to acquire qualifications" (34.1%). With regard to methods of self-development (multiple answers), "self-study/self-teaching through radio, television, specialized books, personal computer communication, etc." accounted for 41.0%, "participation in a lecture class/seminar offered by a private education/training institution for 24.1%, "participation in a study meeting/group outside the company" for 21.4%, "participation in an in-house voluntary study meeting/group" for ·18.5% and "correspondence courses" for 15.3%.

One third of those performing self-development received financial support; of whom 87.6% received it "from their own companies", and 15.4% used "a government education/training benefit system." The average amount borne individually was 76,541 yen; 46,999 yen was received as support "only from the company", 104,766 yen from "the company and education/training benefits", and 130,489 yen from "education/training benefits only". The average total cost obtained by adding the amount borne individually and that of financial support was 72,508 yen (including cases where the total cost was nil).(3)

Though the data are slightly out of date, according to a survey on in-house education of white-collar workers of large companies (administrative/technical employees) (JIL "Education/Training Experience and Training Needs within Companies" 1998), 59% responded that they "Have participated in in-house training in the past 2 years", with higher participation rates among younger employees. The participation rate was high in departments relating to management and planning/public information/advertisement, sales, research and development/technology. With respect to training methods, practice work/drills was most common with 59%, followed by boarding together (24%). The total participation time per course was 32 hours (about 4 days) on average; the time for purpose/task-based training was the longest with an average of 73 hours. Those who bore the training cost individually accounted only for 6%; the amount individually borne was 34,000 yen on average, and was most common for language training and training to acquire qualifications.

With respect to external training, 47% of the respondents answered "Have participated in the past 2 years"; affirmative response rates increased in line with position in the company and company size. The reasons for white-collar workers starting participation were divided into three categories: voluntary decision (38%), instruction by a superior (32%) and advice by a superior (30%). The percentage of voluntary decisions and advice by a superior increased in line with company size, showing a tendency toward attaching importance to individual independence. With respect to the contents of external training courses, functional training was overwhelmingly popular with 47%.

Private education/training institutions (33%) and industry organizations (28%) were mainly used for external training. The primary objectives were to develop business-related application skills (49%) and basic business-related skills (42%); methods of training included lectures (79%), practice work/drills (36%), study group/interchange meeting/informal gathering for discussion (18%). The training time per course was 32 hours on average; white-collar workers who bore training cost individually accounted for just 17%, with the average amount being 80,000 yen.

White-collar workers who "Have experience of participating in a correspondence course in the past 2 years" accounted for 38%; with increased participation among younger employees. There were major disparities among industries; the participation rate was a little less than 60% in the finance/insurance/real estate industries.

The participation rates for functional training (36%) and training for acquiring a qualification (25%) were comparatively high; the training period per course was 5 months on average; 80% of the cost of correspondence courses were borne individually, with the average amount borne totaling 31,000 yen.

Apart from these types of formal training, there are numerous informal opportunities for training available to white-collar workers; typically, voluntary study meetings/groups. Among white-collar workers 40% had participated in this type of voluntary study meetings, etc., in the past 2 years, of whom 70% had participated in an external study meeting. The rate of participation in an in-house or external study meeting was particularly high among white-collar workers in staff departments, such as departments relating to research and development/technology, international operations, personnel/general affairs, management and planning, etc.

Thus, in in-house education/training systems for permanent employees at private companies, the weight of stratified training has dropped and that of purpose/task-based training and functional training is on the increase. Moreover, in the past, participation in training was usually recommended by a superior or the personnel department; however, this is moving towards voluntary participation or promoting career building in a more independent manner by making employees bear part of the cost of education, depending on individual circumstances. Some advanced companies have appointed career consultants to the personnel/education department to support medium- to long-term in-house career development.

As mentioned earlier, partly due to the fact that the development of a system for the provision of guidance/information for voluntary development of vocational skills has been delayed, the promotion of the development of such a system in society has been a priority policy in vocational skills development administration in the past few years.

3. Utilization of ICT and correspondence courses to promote vocational education/training

Cases of e-learning in vocational education/training are mostly at an experimental stage. There are some programs under which individual guidance is provided using the Internet in English conversation classes or at private cramming schools, but they have not become widespread. Attempts have been made to switch to e-learning in correspondence education as well, but it is still at an experimental stage.

The reason why the introduction of e-learning has been delayed in the field of vocational training is that it requires substantial financial and time resources to develop contents of programs, and such e-learning must necessarily be labor-intensive because the training result (progress) of participants in distant places must necessarily be grasped individually. In cases where specific individuals participate in a course at a workplace, it is easy to confirm whether the persons concerned are actually participating, and the supervision function works because there are managerial-level persons nearby and cases of cheating on tests are few. In cases of participation in a course at home, it is not even possible to confirm whether the persons concerned are actually taking a test. In this sense, schooling has an important meaning; in Japan, however, there are currently deficiencies in the schooling system in the field of vocational training.

Since the number of people enrolled in open universities and the various forms of correspondence education is increasing substantially, it appears that there is large potential demand for e-learning; since there are many training courses involving practice work and practical skills in public vocational training; however, the shift to e-learning is fraught with difficulty, so for the time being, private education/training institutions that deal with teaching materials for correspondence courses will take the lead.

In the first place, as far as introductory-level mathematics and languages or computer software that are easily adaptable to program learning are concerned, the use of CAI is already at an advanced stage and adaptation to e-learning will be easy; however, there are inevitable limitations in areas where it is necessary to acquire skills through experience.

4. System for the evaluation/accreditation of education/training results

The national trade skill test system, the accreditation system for trade skill test and the accreditation system for in-house trade skill test exist as vocational ability evaluation systems under the jurisdiction of the Ministry of Health, Labor and Welfare; there is also the business career system for white-collar workers. With respect to job classifications for white-collar workers and for which a vocational ability evaluation system has not been established, efforts are being made to develop a comprehensive vocational ability evaluation system covering a wide range of job classifications.(4)

Under the national trade skill test system, the government tests and certifies the trade skills of workers; this system has been in place since 1959. The system covers those trade skills common among industries nationwide in which many workers are engaged; with Special Grade, 1st Grade, 2nd Grade and 3rd Grade available for 133 job classifications (some vocational categories are not graded, but are a single grade). In 2001, there were 180,000 test candidates, of whom 90,000 were successful.(5)

In order to improve and develop the national trade skill test system by making the most of private-sector vitality, designated testing institutions started to carry out the business relating to the national trade skill testing for the government in October 2001.

Under the accreditation system for trade skill test, the Minister for Health, Labor and Welfare accredits those trade skill tests conducted by non-profit organizations (excluding public-service corporations) that should be encouraged from the perspective of skills promotion. The system covers those trade skills common among companies but limited to specific regions or relatively small in scale. Twelve job classifications (10 organizations), including Hakone handicraft skills, clerical processing, sales, etc., are accredited.

Under the accreditation system for in-house trade skill test, the Minister for Health, Labor and Welfare accredits those in-house trade skill tests conducted by employers that should be encouraged from the viewpoint of promotion of skills. The system covers trade skills which are specific within companies; 146 job classifications, including sales/processing of food products, automobile parts control, etc., are accredited.

Guidelines for white-collar workers' systematic vocational ability development are provided under the business career system, and support is extended for the gradual and systematic acquisition of the professional knowledge necessary to execute the work under one's charge; the system is implemented by classifying applicants into the primary and middle levels in each of the 10 work areas, such as personnel affairs, accounting, etc.

5. Funding mechanism for vocational education/training

The main source of finance for public vocational training is the labor insurance special account. The premium rate of employment insurance, which is labor insurance, is 15.5/1000 of wages, of which 12/1000, which is used for unemployment benefits, etc., is shared equally between the worker and the employer; 3.5/1000 of total wages, which are used for the three projects, that is, the employment security project, the skills development project and the employment welfare project, is borne solely by the employer. Since the unemployment rate is at a high level and the amount of unemployment benefits is increasing rapidly, the portion for unemployment benefits is scheduled to be increased to 14/1000 from October, with the total revised to 17.5/1000.

Incidentally, budgetary steps for the education/training benefit for those in employment (3,570,000 persons are expected to be covered by 40.4 billion yen this fiscal year) are being taken within the framework of the unemployment benefits, etc., which is shared equally between the worker and the employer, so that the nature of education/training benefits for those in employment differs from lifelong human resources development benefits (11.0 billion yen) and human resources development benefits (10.8 billion yen), which are designed to subsidize training provided by employers.

To date, vocational education courses within the framework of school education under the jurisdiction of the Ministry of Education, Culture, Sports, Science and Technology have not been addressed. The need for cooperation with universities, graduate schools, etc., has increased in fostering highly-skilled professionals, but to date, of the 18,000 courses designated by the Ministry of Health, Labor and Welfare under the education/training benefit system, only 98 are being provided at 47 universities/graduate schools. Considering the fact that 3,164 courses are provided at 291 special training schools and 169 courses at 30 schools in the "miscellaneous" category, it is clear that universities are lagging behind in developing the system.

With regard to education/training at private companies, in large companies education/training common to all employees is financed from the head office budget. Company-wide areas, such as stratified training, functional training, purpose/task-based training and the system for studying outside the company at home or abroad, are financed under such budget. Incidentally, specialized training for operational departments is financed from the budgets of respective operational departments.

When education/training is contracted out at the operational office level, education/training costs are financed as an outsourcing item. It is often the case that participation in external study meetings and the dispatch of personnel to external education/training institutions on an ad hoc basis is financed from the general affairs budget of the department concerned. Needless to say, the costs for purchasing technical books for study meetings held at workplaces and subsidies for food expenses for study meetings held after office hours are rarely appropriated as education/training expenses. For these reasons, it is currently difficult to accurately calculate how much is being invested in education/training cost on a company-wide basis in the private sector.

6. Conclusion

In a society where the economic and social environment is changing radically and uncertainties are riding high, it is no longer possible to live out one's working life creditably by leaving one's career in the hands of other people or one's company. Japan is now in a period of transition from an excessively group-based system to a system that considers individuals, and there is an increasing need to actively support individual attempts at independent career building and to generate social vitality. Promotion of independent career building is being emphasized under the 7th Basic Plan for Human Resources Development formulated in fiscal 2001, and a review of the entire human resources development system is under way from this perspective.

In the move toward economic structural reform, evaluation of the effects of various policies extending across various related fields is now being rigorously conducted, in tandem with information disclosure.

Policy evaluation, which in the past tended to be vague, has come to be rigorously conducted, the system now permits the market mechanism to play a role, and there is a gradual shift toward project-based budgets.

In the area of vocational skills development, education/training investment, as well as its policy effects, have come to be questioned; specifically, matters being brought into question include how the task should be shared by the government and the private sector, in what way human resources development measures can be efficiently pursued and up to what areas and at what level the public sector should share the task.

(1) The survey targeted companies with 30 employees or more (10,000 companies nationwide) and employees working at these companies (30,000 persons).

(2) Detailed results in Japanese can be downloaded from http://www.jil.go.jp/seika/noukai/noukai.htm.

(3) For the outline of the government's education/training benefit system, see attached material 1.

(4) Aside from those implemented by the Ministry of Health, Labor and Welfare, there are 451 qualifications for public occupations in various areas (under the jurisdiction of respective ministries and agencies). There are some 3,000 private qualifications, including those under occupation qualification systems and in-house certification systems operated independently by private companies.

(5) For details of job classifications for the national trade skill test system, see attached material 2.

Case 7-1 : Korea

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Abstract

Like other countries, Korea has experienced profound changes in economic and employment environments caused by the digital convergence of ICT, technological innovation, globalization and demographic structure since the 1990s. In order to counter these changes, Korea has tried a paradigm shift in vocational education and training. In 1996 The 'Presidential Commission on Educational Reform' proposed a new vocational education system which encouraged the private sector's active involvement, increased school autonomy and guaranteed learning opportunities for adults. For vocational training the government introduced the vocational competency development scheme with 'Employment Insurance

Law' in 1995 and the 'Workers' Vocational Training Promotion Act' in 1997, which encouraged employers' voluntary investment in training for incumbent workers, employees' efforts for developing their own competencies and competition among training institutes. Despite having achieved a significant progress in making the VET system to be geared towards new demands of the knowledge-based economy, Korea needs to make additional policy efforts to increase financial support for small and medium-sized firms and individual workers, to fully utilize e-learning, and to establish systematic network among local government, vocational education and training institutes and enterprises.

I. Introduction

The rapid development of ICT, technological innovation, globalization, and demographic changes have brought fundamental changes in our economic and social life. Various kinds of new occupations, which require higher level of cognitive capacity and creativity, increase significantly, and life cycle of occupations becomes shorter. In order to counter these changes, advanced countries have already made great policy efforts to provide lifelong learning opportunities for their people and to restructure their education and training systems.

Since the mid 1990s, Korea has tried a paradigm shift in vocational education and training. In 1996 The 'Presidential Commission on Educational Reform' proposed a new vocational education system which encouraged the private sector's active involvement, increased school autonomy and guaranteed learning opportunities for adults. For vocational training the government introduced the vocational competency development scheme with 'Employment Insurance Law' in 1995 and the 'Workers' Vocational Training Promotion Act' in 1997, which encouraged employers' voluntary investment in training for incumbent workers and competition among training institutes.

Although Korea has made considerable progress in addressing policy issues raised by changes in economic and social environment, it has still faced with serious challenges such as low academic ability of students in vocational high schools and junior colleges, as well as a disproportionate financial support for large firms (inability of small & medium-sized firms to utilize the 'vocational competency development scheme').

This paper will first discuss general characteristics of changing trends in economy-related issues and draw some policy implications in chapter II. Chapter III will introduce current status of vocational education and training system in Korea in terms of structure, functions and institutes. Chapter IV will explain recent reform efforts in vocational education and training, and analyze implementation results of selected reform policies. Finally chapter V will suggest future policy tasks.

II. Changes in Economic and Employment Environment

1. Knowledge-based Economy

In a knowledge-based economy, information, knowledge, and skills are the core factors for individual, organizational and national competitiveness. With the diffusion and use of information and communication technologies (ICT), people can have greater access to information than ever before, which in turn makes it possible to create, distribute and use more economically useful knowledge and information.

Production and distribution of knowledge through ICT leads to profound changes in the established pattern of standard economics (e.g., increasing returns to production unit) and structure of markets. Rapid technological development not only lessens a product's life cycle and promotes the invention of new product, but also increases the uncertainty of the future economy.

Every individual, organization and country does not have the same level of ability and opportunities to create, access, acquire and utilize information and knowledge. Differences in diffusion speed of new knowledge and limited chances to get information can widen 'digital divide' between developed and developing countries as well as among social classes within countries. In addition to access to information, capability to make use of it is extremely important, which is highly associated with educational attainment. Investment in education, especially in higher education is regarded as the most critical policy tool to alleviate the digital divide problem and to reap the benefit of ICT in the knowledge-based economy. From this perspective, Table II-1 indicates that Korea needs to upgrade educational attainment level of its labor forces.

Table II-1. Distribution of the labor force aged 25-64 by educational level (1999)
(unit: %)

Country	Below upper secondary education	Upper secondary education	Junior college level tertiary education	University level education	total
Korea	33	42	6	19	100
Finland	24	41	19	16	100
U.S.A	10	51	9	30	100
Japan	18	49	12	21	100
U.K	13	59	9	19	100

Source: OECD (2001). Education at a glance.

2. Globalization

The digital convergence of ICT and the improvement of transportation technology have made a great contribution toward reducing the 'delay and distance obstacles' and to bringing the world much closer together. Thus, small issues of one country or a region can be easily translated into issues of a region or the world. As a nation's market is expanding into regional or world market with the liberalization of trade and investment, competitions among countries in international markets will become more intensified.

With the development of the institutions of international exchange & cooperation and the reduction of trade barriers among countries, international movements of production factors such as labor, capital, and technology as well as "real" product have been increased and will be increased further. Table II-2 indicates both investments from abroad and overseas direct investments increased drastically since 1985-1990.

Table II -2. Investment from abroad and overseas direct investments

(unit: 1000 U.S.$, constant values in 2000, %)

Year	1980	1985	1990	1995	2000
Investment from abroad	472,349 -	1,190,525 (152.0)	1,284,216 (7.9)	2,114,691 (64.7)	15,689,857 (641.9)
Overseas direct Investment	56,140 -	252,278 (349.4)	1,534,325 (508.2)	3,336,002 (117.4)	3,691,523 (10.7)

Source: Korea National Statistical Office (2001). *Major Statistics of Korean Economy*.

Note: Number in ( ) indicates growth rate compared to previous year.

3. Changes in Employment Structure and Job Competencies

A knowledge-based society is characterized by the fact that the structures of industry and occupation changes very rapidly as the life-span of knowledge and information becomes shorter and new ones are created more rapidly. The development of ICT, for instance, leads to large growth in information & communication industries such as production of IC devices like computer and cellular phone, provision of IC services and software development, and also to growth in service industries using ICT, as in Table II-3.

Demand for core competency is increasing in work places. Technological development and globalization have already driven an internal transformation of the enterprise, resulting in changes in the organization of work toward flatter hierarchies and project-based teams. Thus, companies require employees to have core competencies like problem-solving ability, communication skills, information skills, teamwork, self-management as well as firm-specific capacities.

Table Ⅱ-3. Changes in employment growth rates by industry in Korea (unit: 1000 persons, %)

Industry	1980	1985	1990	1995	Ratio of 1995 to 1980	Annual Average Growth rate
Manufacturing	2,781	3,134	4,425	4,168	1.5	2.7
Electrical/Electronic equipment	133	139	195	329	2.5	6.2
Information & Communication	64	70	82	97	1.5	2.8
Subtotal	197	209	277	426	2.2	5.3
Broadcast	22	44	33	54	2.5	6.3
Banking & Insurance	272	271	43	826	3.0	7.7
Advertisement	199	277	339	473	2.4	5.9
Medical & Health Services	60	132	195	265	4.5	10.5
Cultural Services	12	13	32	49	4.1	9.9
Subtotal	565	737	642	1,667	3.0	7.5
Digital Industry	762	946	919	2,093	2.8	7.0
Knowledge-based Industry	1,418	1,653	6,802	3,294	2.3	5.8
All Industries	12,184	13,094	15,889	17,197	1.4	2.3

Source: Bank of Korea.

4. Changes in Labor Market Behavior and Employment Type

The need for a more rapid response to volatile product markets and declining product life cycles have made the enterprises more dependent on external labor market to get manpower needed. In other words, there has been a trend toward an increase in outsourcing. Instability of employment in labor market reduces the investment motivation of companies and makes them more rely on external labor market. This might cause market failure of experienced manpower supply because of the loss of opportunity for employees to gain experience.

As labor market has become more flexible, the proportion of part-time workers and temporary positions has increased. As of 2001, 51.3% of wage workers in Korea belonged to this category, as in Table II-4. Because they work not only in relatively poorer working condition and are not given the opportunity to get vocational training, they cannot escape from the vicious circle of 'unstable employment, unemployment and economically inactivity.'

Table II-4. Wage workers by employment status (unit: 1000 persons, %)

Year	1996	1997	1998	1999	2000	2001
Total	13,065 (100.0)	13,226 (100.0)	12,191 (100.0)	12,522 (100.0)	13,142 (100.0)	13,339 (100.0)
Regular Employees	7,401 (56.7)	7,151 (54.1)	6,457 (53.0)	6,050 (48.3)	6,252 (47.6)	6,500 (48.7)
Temporary Employees	3,860 (29.5)	4,182 (31.6)	3,998 (32.8)	4,183 (33.4)	4,511 (34.3)	4,601 (34.5)
Daily Workers	1,804 (13.8)	1,892 (14.3)	1,735 (14.2)	2,289 (18.3)	2,378 (18.1)	2,238 (16.8)

Source: Korea National Statistical Office (1998, 2002). *Annual Report on the Economically Active Population Survey.*

5. Demographic Change

Korea has entered into an 'aging society' in 2000 and is expected to become an 'aged society' in 2019 as shown in Table II-5. Although aging level is still lower than in advanced countries, aging speed is faster than in advanced countries. So burden to support aged people will greatly increase. In order to lessen economic burden due to the increase of aged population, policy measures to utilize aged people and female manpower should be under taken.

Table II-5. Long-term projection on demographic structure in Korea (unit: %)

Classification		1970	1980	1990	2000	2010	2019	2020
Average age		23.6	26.0	29.5	33.1	37.5	41.4	41.9
Composition ratio	0~14(A)	42.5	34.0	25.6	21.1	17.2	14.1	13.9
	15~64(B)	54.4	62.2	69.3	71.7	72.1	71.4	71.0
	65~ (C)	3.1	3.8	5.1	7.2	10.7	14.4	15.1
(A/B)*100		78.2	54.6	36.9	29.4	23.9	19.7	19.6
(C/B)*100		5.7	6.1	7.4	10.0	14.8	20.2	21.3

Source: Korea National Statistical Office (1996, 2001). *Population Projections for Korea: 2000- 2050.*

6. Implications

To ensure that people acquire and develop capacity to create and utilize knowledge, education and training needs to be continuously provided to all people throughout their lifetimes; irrespective of gender, race, location, etc. This is also crucial from the perspective of social cohesion.

There is a need to take into consideration globalization factors when developing and implementing vocational education & training policies as political and economic systems are becoming more closely inter-linked. Notably, it is required to establish new vocational education and training system to actively respond to international movement of production factors such as labor, capital and technology.

It is necessary to redesign regular vocational education institutions and their programs and to provide vocational education & training opportunities and information to adult workers, unemployed and aged people on a continuing basis. Especially it is required to increase the quality of vocational education & training contents.

Rapid globalization and technological innovations can threaten the economy of a country on the one hand, but provide good opportunity for economic development on the other. To minimize the social cost for transforming to open economy and to fully utilize the chances for economic development, it is prerequisite to have higher quality human resources. For this, it is necessary to have a flexible and open system of vocational education & training in addition to making a consistent and substantial investment.

III. Vocational Education & Training in Korea

1. Vocational Education

Education System

When the Education Law was promulgated in 1949, Korea adopted a school system following a single linear track of 6-3-3-4: six years of primary school, three years of middle school, three years of high school, and four years of college/university. Figure III-1 shows the types and kinds of schools by level of education in the Korean education system. In Korea, following schools are established: 1) primary school, middle school, high school and college & university; 2) college and university of education; 3) junior college, air & correspondence university, and polytechnic university; 4) trade high school; 5) civic school and civic high school; 6) special school; 7) kindergarten; and 8) miscellaneous schools. Among these, the schools in the first category constitute the backbone of the school system.

Vocational Secondary Education

Vocational education starts at high school level in Korea. High schools are classified into academic, vocational, and other high schools (foreign language, art & athletic, and science high schools). There are a total of 1,995 high schools, of which 741 are vocational high schools as of 2002, with a total enrollment of 575,363 which accounts for about 32.0 per cent of total high school enrollment. Vocational high schools aim to educate capable skilled workers equipped with sound vocational awareness and professional knowledge to enable them to cope with rapid changes in an information-oriented industrial society. They provide technical-vocational education programs in the specialized fields of agriculture, technology, business and commerce, marine & fisheries, and home economics. These vocational high schools are the major sources of the craftsmen among workers in Korea.

71.0% of vocational high school students are taking programs in technical and business/commerce high schools, as seen in table III-1. Less than 4% are studying in agriculture and fishery/marine high schools.

The curriculum for vocational high schools is composed of general and vocational subjects. Students are required to take between 204 and 216 units during the three years (six semesters) of study period. Of the 214-216 units, students are required to take 104–154 units of general academic subjects (that is, mathematics and science) and 88–122 units of vocational subjects. Of the 88–122 units allocated to vocational subjects, at least 50 per cent of the units should be allocated for practice sessions.

Under the discretion of the school principal, vocational high schools run field-training programs in collaboration with individual companies. The duration of field training program varies, ranging from 1–6 months in agricultural and commercial high schools, 1–12 months in technical high schools to 3–12 in marine and fishery type high schools.

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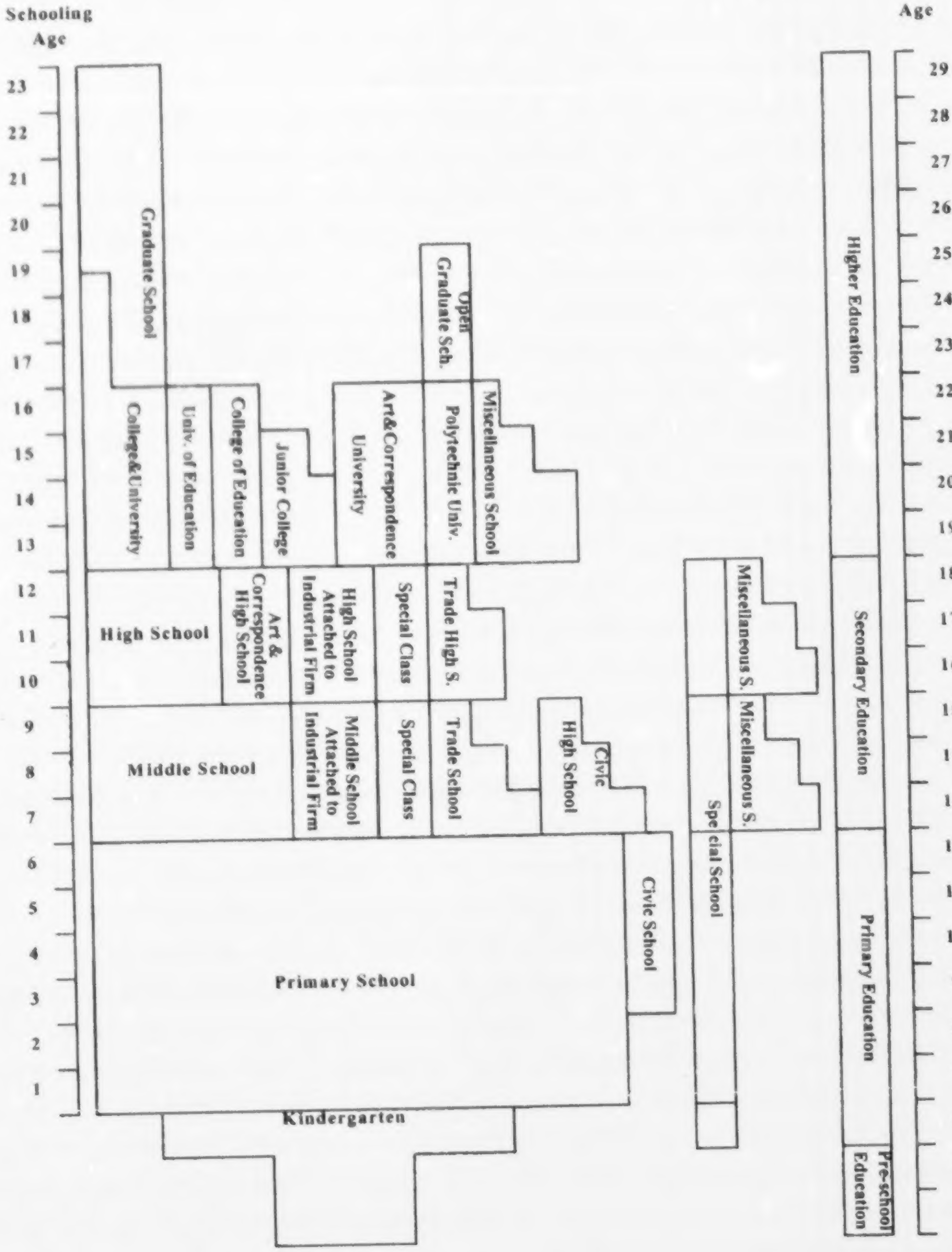
Schooling Age
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Graduate School
Open Graduate Sch.
College&University
Univ. of Education
College of Education
Junior College
Art&Correspondence University
Polytechnic Univ.
Miscellaneous School
High School
Art & Correspondence High School
High School Attached to Industrial Firm
Special Class
Trade High S.
Middle School
Middle School Attached to Industrial Firm
Special Class
Trade School
Civic High School
Miscellaneous S.
Miscellaneous S.
Special School
Primary School
Civic School
Kindergarten
Higher Education
Secondary Education
Primary Education
Pre-school Education

Figure III-1. School system

Table III-1. Number of vocational high schools and students (2002)

Classification	Schools		Students	
	Number	Proportion of vocational schools	Number	Proportion of vocational students
Agricultural	28	3.8	16,408	2.9
Technical	209	28.2	206,518	35.9
Business/ Commerce	221	29.8	201,849	35.1
Fishery & Marine	8	1.1	4,619	0.8
Vocational	69	9.3	41,632	7.2
Comprehensive	206	27.8	104,337	18.1
Total	741	100.0	575,363	100.0

Source: Ministry of Education and Human Resources Development (2002). *Statistical Yearbook of Education*

Post-secondary Vocational Education

Post-secondary vocational education under the formal education system is provided at junior colleges, polytechnic universities and corporate technical colleges.

1) Junior colleges

Junior colleges offer two–or–three year post-secondary programs. The purpose of junior college education is to produce middle-level technicians equipped with a solid base of theories and skills. The specialized courses in junior college are grouped into technology, agriculture, nursing, fishery, health. commerce and business, home economics, arts and athletics, and so on with two– or three–year programs depending on the courses. For example, nursing, clinical pathology, physical cure, radiation, fishing, navigation and engine programs require three years of education. The number of junior college students by program is shown in table III-2. Since established in 1979, the number of junior colleges has increased to 159 as of 2002 with an enrollment of 963,129.

High school graduates and those with an equivalent academic background may enter junior colleges. Admission to junior colleges is determined on the basis of school achievement, scholastic achievement test, interview, and aptitude tests. 30 to 50 percent of the freshmen quota is reserved for vocational high school graduates, craftsmen qualified by the national technical qualifications system and workers having a specified amount of industrial experience.

Table III-2. Number of junior college students, by program (2002)

Classification	Enrollments by Course			
	1st year	2nd year	3rd year	Total
Humanities	21,581	20,281		41,862
Social Sciences	94,178	89,162		183,340
Natural Sciences	270,149	244,789	39	514,977
Medical & Pharmacy	28,030	27,542	18,237	73,809
Arts & Physical Education	66,600	58,987		125,587
Teaching Profession	11,768	11,786		23,554
Total	492,306	452,547	18,276	963,129

Source: Ministry of Education and Human Resources Development (2002). *Statistical Yearbook of Education.*

2) Polytechnic universities

Polytechnic universities aim to provide employed youth and adults with higher education opportunities. The requirements for admission to a polytechnic university are the same as those for regular universities. Priority in selection is given to persons with experience in industrial organizations, holders of national technical qualifications and graduates from vocational high schools. Having begun with the foundation of Kyonggi Open University of Technology in Seoul in 1982, there are 19 polytechnic universities with a total enrollment of 187,040 students in 2002.

3) Corporate college, technical college and corporate technical college

There are three types of corporate colleges: corporate college(1), technical college(1), and corporate technical college(4). Corporate colleges, which can be established by company with more than 300 employees, offer junior college and 4-yr college programs. Technical college, which can be established only by school foundation formed by individual company, corporate body, and consortium of company and junior college, also provides junior college and college programs. Graduates from both corporate college and technical college get associate and bachelor's degree, authorized by the Minister of Education and HRD.

Corporate technical colleges offer three levels of programs for selected employees: junior college, college, and graduate programs. Graduates from corporate technical college receive no official, marketable qualification (degree) from the program. Their qualifications are, however, recognized within an enterprise group with which the company is affiliated.

2. Vocational Training

1) Vocational training system

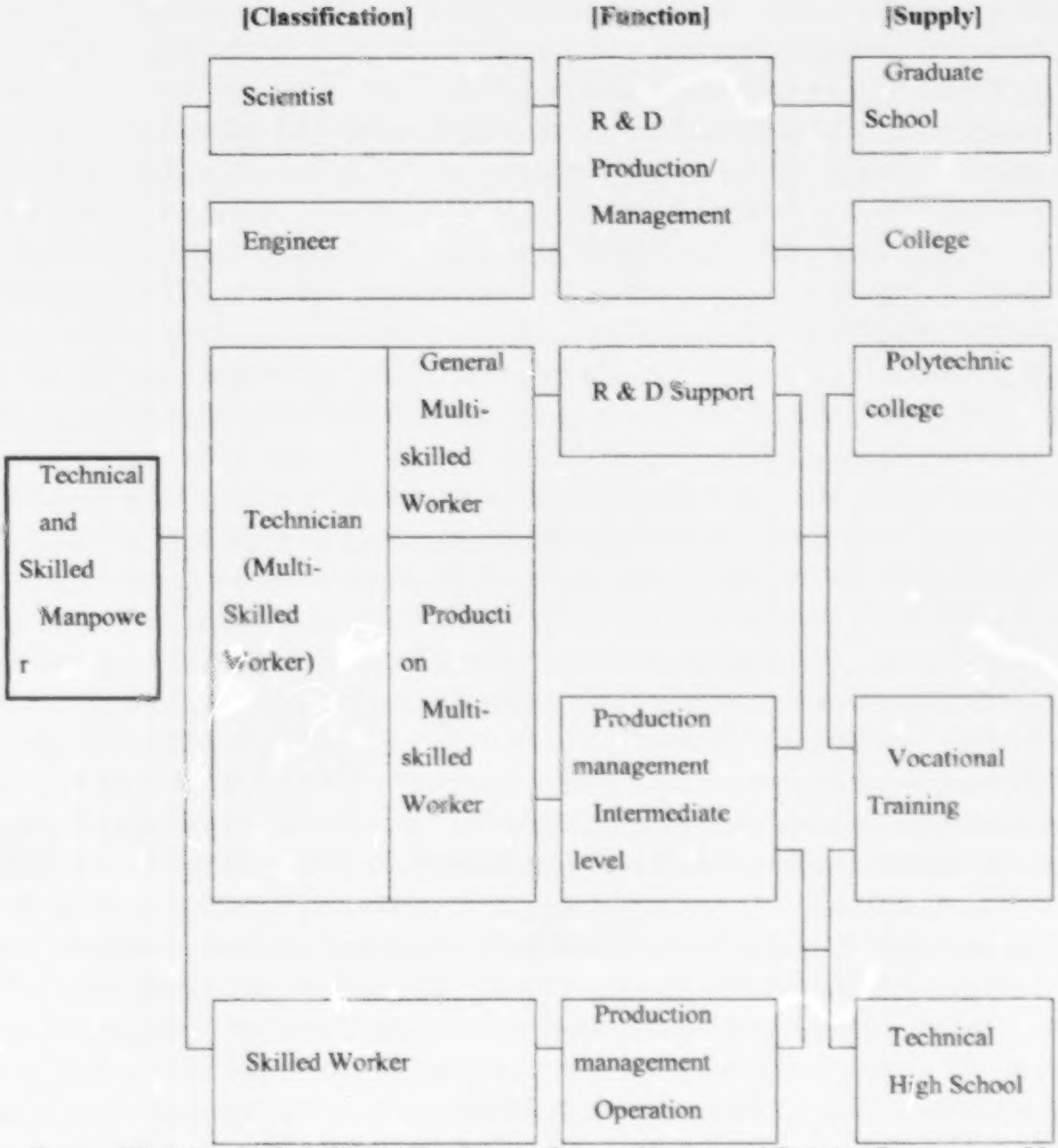
The Ministry of Labor introduced vocational training system in 1967. It had functioned as a crucial supplier of skilled workers and technicians during the 1970s-1980s by providing vocational training opportunities to middle and high school graduates, dropouts who did not have work skills and employees. After the foreign currency crisis in late 1997, it has functioned as an effective policy tool for solving unemployment problems and enhancing social cohesion

With substantial progress of the 5-year economic development plan, demand for technical manpower kept increasing. Although the government established more vocational high schools, however, this could not meet demand for skilled workers. Need for institutional mechanism which makes employers actively participate in training their employees was raised. Therefore the government enacted 'Vocational Training Act' in 1967 with the purposes of securing the supply of skilled manpower needed for industrialization and enhancing employability of individuals.

In 1974 the government enacted the 'Special Act for Vocational Training' because there were still severe shortage of skilled workers. Although the Vocational Training Act was introduced in 1967, employers did not invest in training their workers but instead tried to scout skilled workers from other companies. The main objective of the 'Special Act' is to make employers responsible for training their employees. In 1976, the government enacted 'Basic Law for Vocational Training' and introduced levy system. The employer should either provide training services to their employees or pay a levy.

In 1995 the government introduced the 'vocational competency development scheme' by enacting 'Employment Insurance Law.' According to the law, all employers should pay employment insurance fees for employment insurance fund. In 1997 the government enacted 'the Workers' Vocational Training Promotion Act' and abolished 'the Basic Law for Vocational Training.' Through the new act, the government changed vocational training paradigm from government-controlled and supplier-oriented approach to consumer-oriented approach. Training market also is opened to anybody. The Ministry of Labor provides financial support to employers who run vocational competency development programs, employees and unemployed that make an effort to develop their vocational competencies.

Figure III-2 describes the supply system of technical and skilled manpower in Korea. Scientists and engineers are mainly trained in graduate schools and colleges, while technicians and skilled workers are trained in vocational high schools, polytechnic colleges and vocational training institutes.


[Classification]
[Function]
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Scientist
R & D Production/ Management
Graduate School
Engineer
College
Technical and Skilled Manpower
Technician (Multi-Skilled Worker)
General Multi-skilled Worker
R & D Support
Polytechnic college
Production Multi-skilled Worker
Production management Intermediate level
Vocational Training
Skilled Worker
Production management Operation
Technical High School

Source: Ministry of Labor (2001). *The Current Status of Vocational Training Programs*, p. 20.

Figure III-2. Supply System of Skilled Manpower

2) Vocational training programs

The vocational training programs are classified into 'initial training', 'upgrading training', and 'job-transfer training', depending on the curriculum, duration and trainee profiles. Initial training aims to train basic competencies that are required in the workplace and is intended for those newly seeking employment or prospective re-employment workers, such as high school graduates, former soldiers and the unemployed. This type of training lasts for at least one month.

Upgrading training is provided for workers who have already completed initial training (or those who are deemed to already possess basic skills) and wish to acquire further skills. The duration of the training must be required longer than 20 hours.

Job-transfer training aims to assist those who are seeking to transfer jobs or unemployed workers to acquire new skills. The duration of the training program must be longer than two weeks.

3) Vocational training institutes

Vocational training institutes can be classified into two categories: i) publicly established and managed institutes and ii) privately established and government-supported institutes. The public institutes include the following: the training institutes run by Human Resources Development Service of Korea (HRD Korea – 21 vocational schools and 22 polytechnic colleges), the Korean Chamber of Commerce and Industry (KCCI – 8 manpower development institutes), local offices of administration (8 vocational training institutes and 96 institutes for women), the Korea Employment Promotion Agency for the Disabled (KEPAD – 1 institute), and the Ministry of Gender Equality (53 manpower development center for women). These institutes provide vocational competency development programs for adolescents not in school, elderly people, handicapped people, and women.

Second category includes in-plant training institutes and private training institutes nominated by the Minister of Labor. These institutes offer training programs for firms and individual workers and get financial support from the government.

IV. New Approaches and Implementation of VET

1. New Vocational Education System

A. PCER's Vocational Education Reform Proposal

The 'Presidential Commission on Education Reform' proposed vocational education reform plan in 1996. The goal of the reform plan was to establish lifelong vocational education system as a way of realizing lifelong learning society. PCER suggested promoting the reform plan in the following four directions.

1) For students, more educational opportunities will be given in order to continue their studies after graduation through going to junior college, polytechnic university and corporate technical college. After graduation, they can either directly go to junior college or join the labor market first and then go to junior college. To make this workable, the government will invest more on vocational education.

2) For schools, competition and cooperation will be encouraged among them. To induce and promote cooperation between schools and industries and among schools, an infrastructure such as institutional arrangement and financial subsidy will be institutionalized.

3) For industries, vocational education will be redesigned and restructured to make the program more useful to them. Industries will be encouraged to participate in curriculum design & evaluation and school management. The government will support active exchanges of human and physical resources between schools and firms.

4) For a nation, the overall efficiency of vocational education system will be increased by: a) revision of qualification system to link learning and employment and to systematically integrate vocational education and training, b) introducing ICT in vocational education and training, and c) allowing more autonomy of schools and strengthening accountability measure of local governments.

Based on the above directions, PCER proposed several reform plans for vocational high schools, junior colleges, corporate technical colleges, qualification systems, and administration & finance supporting systems. In the following section, first three areas are discussed.

B. Implementation Results

1) Vocational high schools

With the progress of knowledge-based society, higher education institutes such as junior college, 4-year college & university as well as graduate schools have become major institutes of vocational education. Thus the role of vocational education in high school level is changed to provide basic education for acquiring generic vocational competencies instead of specific occupational knowledge and skills.

In order to provide a continuing education opportunity to vocational high school graduates and to strengthen curriculum linkages between vocational high schools and junior colleges, a '2+2 program, linking the curriculum of the second and third years of vocational high schools with that of junior colleges, has been implemented. Students in the program are given priority in the admission to junior colleges, which participated in the program. As of 2001, 405 vocational high schools and 118 junior colleges participated in '2+2 program.' The Ministry of Education and HRD provided 4 billion won of subsidy to 40 junior colleges.

2) Junior colleges

In order to respond properly to demands for knowledge and skills from industries, junior college and firms have developed vocational education programs together by contract. Customized vocational education programs were implemented in more than 98 junior colleges of which 60 were provided with financial support from the government in 2001. Two kinds of programs were implemented: 1) regular vocational education program for training technicians and 2) special education program for upgrading incumbent workers. The number of the latter increased from 100 in 1999 to 162 in 2000, while that of the former decreased from 424 to 312, reflecting that most firms were more interested in special programs for upgrading their employees' skills and knowledge.

As a way of providing continuing education opportunity to adult workers, junior colleges have special program by which an adult worker with more than one and a half years of experience can get admission without examination and obtain an associate degree after 2 years of regular course work. The number of students in this program is not included in official enrollment quota. The number of firms, which participated in this program, increased from 3,528 in 1995 to 20,588 in 1998. Since 1998 there were no significant changes. As of 2001 29,595 workers in 20,813 firms were enrolled in 98 junior colleges as shown in Table IV-1.

Table IV1. Special program for adult workers in junior college (unit: person, %)

year	Number of junior colleges	Admission Quota (A)	Quota for adult worker	Enrollment of adult worker (B)	B/A	Number of participating firms
1994	42	193,070	5,234	3,455	1.8%	-
1995	57	215,470	11,230	7,531	3.5%	3,528
1996	77	234,275	18,170	14,231	6.1%	6,408
1997	89	248,850	28,830	23,730	9.5%	13,768

1998	99	278,630	38,679	27,158	9.7%	20,588
1999	105	294,250	35,145	25,060	8.5%	19,007
2000	103	294,175	30,320	28,690	9.7%	20,621
2001	98	292,035	39,778	29,595	10.1%	20,813

Source: Ministry of Education & HRD.

3) Corporate college, technical college, and corporate technical college

Although the importance of corporate education has been greatly emphasized, the numbers of the three types of corporate colleges are quite small. The number of corporate technical colleges decreased from 14 in 1999 to 4 in 2001(one for 4-year college course and three for graduate courses in 2001) due to 1) economic crisis in 1997, 2) vocational competency development project which provides financial support, and 3) school-industry cooperation programs. There are only one corporate college and one technical college in 2002, which are Samsung Electronic Engineering College, established in 2001, and Jungsuk College, established in 2000, respectively. Samsung Electronic Engineering College has 2-year associate degree programs for digital engineering and digital display, while Jungsuk College has both bachelor degree program and associate degree program for business administration and electronic engineering.

All these can be interpreted as policy efforts to make it easier for vocational graduates to pursue further studies at junior college and university level. These are intended to attract more intellectually-talented students into vocational education track and to help make them better equipped with theoretical grounding to cope with rapidly changing technology.

2. Vocational Competency Development Program

A. Workers' Vocational Training Promotion Act

Since the enactment of 'Basic Law for Vocational Training' in 1976, the government had strategically focused its training policy on providing initial training to convert the abundant yet untrained human resources into industrial workforce. As the knowledge-based society emerged, however, new training needs were raised. Training for upgrading incumbent workers' skills and knowledge and job transfer became an important issue. The focus of vocational training expanded and shifted from supplying skilled workforce to upgrading and maintaining workers' vocational competency throughout working lifetime. This called for new framework of vocational training.

As explained in previous section, the Workers' Vocational Training Promotion Act went into effect in 1999. With the new act, compulsory training system was abolished and restrictions on in-plant training practices were removed. Several new policy measures were implemented within the framework of the vocational competency development scheme based on the employment insurance system. Compared to the past, new system diversified target groups and types of training so that both job seekers and workers could get skills and knowledge required in ever-changing economic environment. The new system took demand (customer)-oriented approach, which promoted voluntary initiatives of private sector to provide training. The government provides financial support to employers and employees from the employment insurance fund. Table IV-2 compares old and new system.

B. Implementation Results

Vocational competency development scheme aims to upgrade the quality of human resources by encouraging firms to invest in enhancing the vocational competency of their employees and workers to make efforts to improve their skills and knowledge. This is expected to help firms and workers to make timely and effective responses to rapidly changing labor market conditions. In order to induce voluntary investment and efforts for upgrading skills, the government utilizes financial support from employment insurance fund as an incentive measure.

The number of people who received vocational training for unemployed has decreased since 1999, while the number of trainees in training for upgrading skills for employees has dramatically increased, as shown in Table IV-3.

Table IV-2. Comparison between old and new vocational training system

Classification	Basic Law For Vocational Training	Workers' Vocational Training Promotion Act
Objectives	Provision of VT as a mandate imposed by the government	Provision of VT as an independent initiative of the enterprise based on its own needs
Target groups	Primarily youth who plan to find employment rather than pursue tertiary education	All workforce, including the employed workers, the employed, and youth planning to find jobs rather than pursue tertiary education
Focus of training	Training for skills needed for production workers in the manufacturing industry	Focus of training expanded to skills needed for administrative personnel, workers in the service industry, etc.
Applicable to	Designated workplaces with staff of more than 1,000 workers	All workplaces and workers
Main contents of **The Act**	Stipulates form, standards, and process of VT	In addition to stipulating the form, standards, and process of VT, presents a comprehensive plan for developing workers' skills and competency
Range of training **The Act concerns**	Only VT that is provided in keeping with the training standards	Education and training as specified in Employment Insurance Act, and employment promotion training as stipulated in Framework Act on Employment Policy

Source: KRIVET(2001b). *Vocational Training in Korea*.

Vocational training for the incumbent workers (VT for upgrading workers' skills) has enormously expanded since 1997, according to table IV-4. The number of employers who participated and received financial support for implementing vocational competency development project has increased more than 10 times from 8,863 in 1997 to 94,410 in 2001. On the other hand, the number of trainees has increased by 8.2 times for the same period. Financial support also has experienced more than fourfold increase. The number of training scholarship recipients increased steadily until 2000 and then made dramatic increase from 252 in 2000 to 40,045 in 2001.

Table IV-3. Trainees and Budget of Vocational Competency Development Project

(Unit: 1000 persons, billion Won)

Type of Training		'98	'99	'00	'01
Total	Trainees	1,088	1,189	1,516	1,871
	Budget	642.8	804.8	762.9	718.6
VT for the unemployed	Trainees	331	358	216	180
	Budget	348.6	456.1	338.4	263.8
VT for Upgrading Workers' Skills	Trainees	679	795	1,239	1,626
	Budget	57.3	106.3	175.1	227.1
Training for Technical Workforce	Trainees	78	36	61	65
	Budget	236.9	242.4	249.4	227.7

Source: Ministry of Labor (2002. 7). *Statistics on Vocational Competency Development Project*. P.42

Table IV-4. Vocational Training for the Incumbent Workers (Unit: person, 1000 Won)

Classification		Total	VT	Paid leave Training	Training Tuition Loan	Training Scholarship	Loan for Equipment/facilities
'97	Workplaces	8,863	4,969	144	3,748	-	2
	Trainees	197,931	184,007	5,559	8,365	-	-
	Financial Support	56,611	28,362	13,027	15,222	-	-
'98	Workplaces	25,922	17,741	339	7,842	-	4
	Trainees	424,895	408,603	3,940	12,350	2	-
	Financial Support	70,692	40,409	9,117	16,949	1	4,216
'99	Workplaces	43,850	43,511	333	-	-	6
	Trainees	802,800	781,408	7,789	13,552	51	-
	Financial Support	115,047	82,764	5,724	23,484	40	3,035
'00	Workplaces	86,692	73,411	309	12,960	-	12
	Trainees	1,246,932	1,220,334	7,756	18,590	252	-
	Financial Support	188,272	140,475	5,589	34,626	59	7,978
'01	Workplaces	94,410	80,860	271	13,273	-	6
	Trainees	1,625,780	1,555,402	8,611	21,772	40,045	-
	Financial Support	234,488	170,414	10,145	43,037	3,543	7,349

Source: Ministry of Labor (2002. 7). *Statistics on Vocational Competency Development Project.*

However, there are considerable differences in the number of trainees and paid-leave training between large and small firms. As in table IV-5, the majority of trainees in vocational training for incumbent workers belong to large firms with more than 1000 employees. Small firms account for only 11.7% of trainees with less than 150 employees in 2001. About 98.5% of trainees for paid-leave training is concentrated on large firms with more than 150 employees, while only 1.5% is accounted by small firms with less than 150 employees in 2001.

Table IV-5. Workplaces and Trainees of Vocational Training, by Firm Size

(Unit: places, 1000 Won, persons, %)

Year	Number of firms	Sum of Subsidy	Number of workers in firms of different sizes			
			Total	Less than 150 workers	150~1000 workers	More than 1000 workers
1999	43,511	82,764,007	781,408 (100.0)	98,479 (12.9)	232,062 (29.7)	450,867 (57.7)
2000	73,411	140,475,492	1,220,334 (100.0)	166,149 (13.6)	315,881 (25.9)	738,304 (60.5)
2001	80,860	170,413,851	1,555,402 (100.0)	181,509 (11.7)	419,028 (26.9)	954,862 (61.4)

Source: Ministry of Labor (2002.7). *Statistics on Vocational Competency Development Project.*

V. Concluding Remarks

Since the 1990s, Korea has achieved significant progress in making the VET system to be geared towards new demands of the knowledge-based economy. New VET system is designed to encourage individuals and enterprises to participate actively in a lifelong process of learning. The government has recently implemented a vocational competency development scheme financed by employment insurance fund, in addition to increasing continuing educational opportunities throughout regular school system for adults. Customer-oriented approach, promotion of competition and cooperation among VET institutes, and the provision of more VET opportunities to adult workers deserve positive evaluation.

In order to develop the VET system further, followings need to be considered:

1) Special policy measures are required to support small and medium-sized enterprises. SMEs have suffered from severe constraints of financial and human resources. Central and local governments should take certain steps to increase the government subsidies and provide specific training services to them.

2) E-Learning should be more fully utilized as an effective way of providing lifelong vocational education and training services. For this, it is needed to diversify the contents of E-learning and to develop various ways of applying E-learning to enhance its effectiveness. Systematic working relationship among related government ministries is also crucial.

3) Financial support to individuals is one of the key factors to realize lifelong learning society. It is desirable to increase government subsidy and employment insurance fund for paid-leave training, training & education loan and scholarship. Private banks can expand tuition loan programs with government subsidy for interest.

4) Network among local government, vocational education and training institutes and enterprises can play a crucial role in developing an effective VET system which meets VET demands specific to the local situation. This network system will contribute to making an information system for employment projection as well as developing VET programs.

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Case 7-2 : Korea

Current operational status and future direction of CE in vocational colleges

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Abstract

Customized education(CE) provides education in accordance with the requests from the industry for contents of the training and the number of workers to be supplied, breaking away from the existing unilateral education by the school. Under customized education, the school regards the industry as a education customer and incorporate the industry's requests and needs to the education in order to nurture highly skilled professionals, thus removing the need for retraining or adjustment training in the industry, strengthening the competitiveness of the industry and the nation.

The customized education system was formally adopted by vocational colleges across the nation when Yeungjin Junior College and Daecheon College, designated to carry out pilot programs of letting students choose their fields upon entrance and freely choose majors later, or "Free Major Program" from 1996 to 1997, reported their successful results from the pilot programs. The government highly recognized the results of the pilot programs and

incorporated the customized education into the nation's educational policy and has offered financial support to colleges with customized education system since 1999 in order to promote and spread customized education. As a result, some 120 colleges or 75.5% of the total 159 colleges across the nation are currently implementing the customized education system, bearing fruitful results in various aspects.

However, there are still much room for promoting and putting in place the customized education system. In this sense, the challenges for the system's further development are as follows.

First, there should be raised awareness and a paradigm shift in relation to the customized education.

Second, a consultation body consisting of the industry, vocational colleges, government organizations and research institutions should be established in order to set up the overall framework for operation of the customized education system.

Third, an appropriate environment for the customized education should be created in each college through analysis of its education environment. The education environment analysis should be carried against professors' capability, training courses, experimentation facilities, etc. and all the preparations should be thoroughly made prior to the adoption of the system.

Fourth, continuous efforts by concerned parties should be made in order to adjust to the industry's technological changes and social changes.

Fifth, a variety of field training opportunities should be offered.

Sixth, advanced facilities and equipments and highly qualified professors should be continuously secured.

Seventh, facilities and equipments should be shared by school and the industry and colleges should strengthen their support for industries.

Eighth, parties to the customized education agreement should be diversified.

Ninth, various extra courses(improvement education) should be developed and operated.

Tenth, the appropriate finance for customized education should be secured reflecting the reality.

Last, the government should gradually expand its financial support for customized education.

I. Introduction

Vocational colleges are educational institutions with the aim of nurturing professionals and highly trained workers needed in every field of the society which has been diversified, professionalized and fractionalized. Therefore, a vocational college should provide students with practical and customer-oriented education so that they can well adapt to the society or the industry immediately after their graduation. However, so far, vocational college students have received uniform education which does not reflect the demand by the society. As a result, students have not been able to carry out their job responsibilities when they were employed after graduation and thus they had to go through retraining programs in the workplace. This high cost and low efficient education system has ultimately led to the weakened competitiveness of the country.

Against this backdrop, customized education was introduced to prevent further waste of education resource and to nurture highly trained workforce required by the industry. As mentioned above, customized education aims at producing highly trained workers who can put their skills to use the minute they leave the classroom without any additional training by shifting from the existing uniform education given by schools toward an education reflecting the needs of customers such as businesses.

In order to implement customized education, the Ministry of Education and Human Resources Development designated Yeungjin Junior College and Daecheon College for pilot Free Major Programs during the years of 1996 and 1997. The pilot program turned out to be very effective and the government started to provide financial support for colleges with customized education system since 1999 in order to spread the system to the rest vocational colleges in the nation.

Currently, of the total 159 vocational colleges, 75.5% or some 120 colleges are carrying out customized education. In addition, the Presidential Commission on Education and Human Resource Policy has recently proposed to the President that the customized education system be adopted also by four-year colleges.

Against this backdrop, this paper deals with the overview of customized education, contents and operational process of customized education, current operational status of customized education and future direction of and proposals for customized education.

II Overview of customized education

1. What is customized education?

Customized education system was introduced to prevent further waste of education resources and to nurture highly trained workforce required by the industry. As mentioned above, customized education system aims at producing highly trained workforce that can immediately placed in working sites without any additional training, by changing the existing uniform education given by schools into an education reflecting the needs of customers such as businesses. Customized education, therefore, removes the need for retraining or adaptation training in the industry, strengthening the competitiveness of the industry and the nation.

In more detail, customized education can be described as follows.

First, Customized education let schools break away from the existing unilateral education and provide education in accordance with the requests from the industry. Schools may be asked to produce workforce with certain job capabilities in certain fields or be asked in relation to the contents and technological level of education and the required number of workers. Schools may also understand the needs of the industry in advance and incorporate them into courses by analysing the industrial environment, job responsibilities and customers in the regional community.

Second, under the customized education system, schools set different education objective, curriculum, and subjects according to each major in each field, which enables the school to adjust itself to the needs of businesses and evolving social environment more actively and flexibly. In other words, customized education system discards the existing uniform concept of departments and it classifies certain fields and majors according to the technological changes in the industry and the trend of required number of workers by businesses, and then sets up education objective, curriculum and subjects for each major course. By flexibly operating the customized education system, schools can more actively respond to various changes in the industry and the society.

Third, under the customized education system, students are admitted by field and later, upon completing liberal arts and basic courses, they decide their majors for in-depth education according to their aptitude and desire. Under the system, students have a good chance of developing their creativity and independency.

Fourth, customized education seeks to cultivate highly trained workforce required by the industry by offering practical and in-depth education through development of necessary textbooks and teaching materials for each major course. Graduates may be directly put into workplace without any retraining or adjustment training, thus saving education resources and strengthening the competitiveness of the industry and the nation.

2. Introduction of customized education: Background and objectives

1) Introduction of customized education: Background and process

World-class businesses today are actively responding to the political, economic, social and technological changes taking place nationally and globally in order to secure a competitive edge through establishment of various management strategies. These strategies often focus on providing customers with quality products and services at reasonable prices by raising the efficiency and productivity of their structures.

In this era of ever growing competition, however, vocational colleges in Korea have failed to sharpen their competitive edges by enhancing the quality of education, just benting on expanding the number of students, which, as a result, has led to a growing number of poorly skilled students. This trend is attributable to schools and professors that have taken complacent attitudes and turned a blind eye to the harsh reality of the survival of the fittest.

However, Yeungjin Junior College had forecast that the quantity-oriented growth would not be sustainable for the school in responding to the decreased human resources and informatization-driven changes in the industry in the 21 century and would ultimately lead to a crisis. Yeungjin Junior College identified the trends of globalization, openness and informatization as tough challenges for vocational colleges and set up strategies to survive the unlimited competition in the 21 century and to develope itself into a world-class college. With a strong commitment and vision, the college set out to further enhance the quality of education by pushing for 'Specialized and professionalized major courses,' differentiated with major courses in other colleges.

So far, vocational colleges have failed to produce highly specialized workforce required by the industry. It was pointed out that one of the biggest reasons behind poor education in colleges was the existing uniform and non-practical education system. In fact, in the mid-1980's, there was a strong voice for establishment of 'Industrial College of Technology,' particularly from conglomerates, in order to train and nurture the required workforce of their own, rather than hiring college graduates who lack the adjustment capability on the working site. In this situation, what emerged as a breakthrough solution was shifting the focus of education from supplier(schools and professors) to customer(students and the industry). This paradigm shift implicated a seismic change in the vocational college education. It sounded plausible in theory, but how to implement the about-face in reality was certainly a great challenge.

Against this backdrop, Yeungjin Junior College established "Short- and Long-term Development Plan for Major Specialization" in February 1994, which was announced in June 1994. At the heart of the plan was 'Operation of Major Course System,' which aims at cultivating professional workforce with the capability to adjust to workplace without any additional training. The system was adopted as a measure to specialize each major and has been implemented since 1995 on a trial basis. In 1996, Yeungjin Junior College was designated as a pilot college for the operation of "Free Major Programs" by the Ministry of Education. In the process of the operation, the customized education system was proved to be able to offer an effective customer-oriented education based on the close cooperation between school and the industry and has started to be adopted by colleges nationwide.

2) Objectives of introduction of customized education

As mentioned above, the objectives of customized education are as follows.

First, by providing an education that helps students equipped with the level of skill required by the industry, students' capability to adjust themselves to actual working sites are improved, thus heightening the competitiveness of the industry and the nation. Customized education was introduced to satisfy the industry as a major customer and to help the industry promote its competitive strength by cultivating and producing highly trained workforce and also to contribute to the advancement of national competitiveness.

Second, customized education seeks to cultivate professional workers who can put their skills to use the minute they leave schools without going through any retraining course, thus removing the possibility of wasting education resources. So far, college education in Korea has mainly centered on abstract theories irrelevant to what is going on in real working sites and has been unilaterally given by school. Therefore, graduates have had to receive retraining after employment, which has caused serious waste of education resources and loss of confidence of the industry and the society in college education. However, as customized education is introduced, in-depth and practical education is given to students, helping them immediately jump into their working life without additional training after employment, thus minimizing the waste of education resources.

Third, the operation of Free Major Programs under customized education, enables schools to provide education according to students' aptitudes and desires, thus enhancing independency and creativity of students. In the past, admission and education processes in colleges have been uniform, taking no account of students' aptitudes or wishes, hampering development of students' independency and creativity. However, with Free Major Programs under customized education, students are admitted by field and, after a certain period, are given a chance to choose major courses as they want, which improves their independency and creativity.

Fourth, customized education strengthens the academic-industry partnership by providing industrial workers in the local community with education(including retraining) on new, state-of-the-art technologies developed or introduced for in-depth education. Under customized education, based on the linkage between school and the industry, a school offers newly developed technologies and knowledge to the partner company and the company provides advanced technologies and facilities to the school, thus consolidating and further expanding exchanges and cooperation with each other.

3. Characteristics of customized education

Characteristics of the customized education system are as follows and the realization of the characteristics is pursued in operating customized education.

First, customized education is absolutely customer-oriented. That is, customized education system breaks away from the supplier-oriented education of the past and satisfies customer (industries) by providing education and by producing highly trained workforce required and desired by the customer. By doing so, the school gives customer confidence in the college education.

Second, customized education focuses on field-oriented education reflecting practical knowledge and skills used in actual working sites. By doing so, there is no barrier between school and the industry and industries can expect OJT(On-the-Job Training) or Off-JT(Off-the-

Job Training) effect from customized education. This practical education can contribute to the advancement of technology and productivity in the industry, thus elevating the competitiveness of not only the industry but also the whole nation.

Third, customized education is work-oriented education. It gives students the work-oriented education directly related with the job responsibility on the working site so that students can put their skills to use immediately after graduation. Customized education help students go beyond the simple acquisition of knowledge by rote learning and apply their knowledge for achievement of desired objectives by themselves.

Fourth, customized education is human-oriented education. Since customized education is centered on the customer, working sites and working experience, it is not only conducive to development of the industry and the nation but also to improvement of the living standards of people, bringing the society one step closer to a welfare society.

4. Benefits and effects of customized education

1) Benefits for the industry

The benefits for the industry brought about by customized education are as follows.

☐ Contents and technological level of the customized education are up to the level required by the industry.

☐ Highly trained workforce is cultivated and put to the industry, enabling companies to sharpen their competitive edge by heightening technological power and productivity.

☐ Companies can save time and money that have been formerly put in the on-the-job training or retraining of newly employed workers.

☐ The industry can acquire up-to-date knowledge and technology, leveraging the close partnership with schools under the customized education system.

2) Benefits for students and parents

The benefits for students and parents brought about by customized education are as follows.

☐ Students can freely choose their majors according to their own aptitude and interest a certain period after their entrance to college. Therefore, they can make the best use of their aptitudes and are highly motivated to study.

☐ Students are trained to become professionals with high capabilities by receiving quality education on practical technology and knowledge being used in working sites in a favorable environment equipped with advanced facilities.

☐ Since employment after graduation is guaranteed to students, they can concentrate only on studying with the sense of pride and stability. If scholarship is awarded, the student can be relieved from the burden of paying tuition.

3) Benefits for schools and professors

Schools and professors can enjoy following benefits under the customized education system.

☐ The efficiency of education is maximized since schools can operate curriculums more flexibly in accordance with conditions of the industry and technological and social changes.

☐ Schools can provide effective job training to students by utilizing various facilities and equipments owned by the industry and by inducing participation of industry figures on the education.

☐ Schools can promote its status and attract talented students by producing competent workforce and by guaranteeing employments to graduates.

☐The academic-industry cooperation is further consolidated through improved understanding of each other, greater exchange of information and technology, and through collaborative research projects.

4) Benefits for the society and the country

Customized education gives following benefits to the society and the country.

☐ With professional workforce with high capability nurtured under the customized education system, the industry can secure improved corporate competitiveness, which, in turn, can lead to stronger national economy and competitiveness.

☐ Customized education meets various needs of the society, contributing to development of the industrial society. Moreover, with advanced technology, the groundwork is laid for Korea to play a leading role in the technology competition era of the 21 century.

☐ Various programs are developed and provided and open, life-long education is offered for the benefit of the local community.

5. Preconditions of introduction of customized education

In order to introduce the customized education system, these following preconditions should be met.

First of all, there should be raised awareness of customized education among parties concerned. The customized education system is completely different from the existing education systems and there should be consensus for the introduction of the system among parties concerned. If schools or parties concerned lack a clear understanding of and confidence in the customized education system, it is impossible to push for introduction of it. Therefore, parties concerned should fully recognize the need for customized education as a means to raise the competitiveness of both school and the industry. In addition, schools and professors should not fall into complacency with their existing role and have to make changes in their attitude so that they can actively adjust themselves to the evolving environment.

Second, the school system should be reorganized for implementation of customized education in order to fully reflect the requirements from businesses into curriculum and to make it possible to continuously implement customized education. So far, colleges have been structured mainly for formality's sake. However, their structures needs to be changed for stronger linkage with the industry.

Third, appropriate facilities and equipments should be secured for customized education, which provides highly technological training up to the level required by the industry. This means a huge investment on the part of the school. So far, schools have been criticized for being unable to give the education with the level required by the industry to students. This was mainly because schools did not make investments in the needed facilities and equipments, thus failing to provide practical, work-oriented education. Since one of the objectives of customized education is helping students put their skills to use the minute they leave classroom, it is essential for the school to secure a strong financial means and to expand facilities and equipments.

Fourth, a strong partnership between school and the industry should be formed. Since customized education is given according to the needs and requests of the industry, a close cooperation between school and the industry is imperative in the process of implementing customized education. Although, the customized education system was originally introduced for the development and increased competitiveness of companies, there have been cases where the system was viewed as ineffective by the industry because of the lack of understanding, personnel and preparatory time and the unripe climate in working sites. Therefore, if customized education is to be effectively implemented, relevant strategies for stronger linkage and cooperation between school and the industry should be established.

Ⅲ Contents and operational process of customized education

1. Operation of Free Major Programs

Customized education is most effective under major course system breaking away from the existing concept of department-based system. Under the major course system, departments with similar characteristics are integrated into one field, which facilitates exchanges between departments such as co-running of labs and opening of classes to one another, and which also provides a wider window of opportunities for students in choosing their career paths. In particular, it would be very desirable for engineering field to implement the major course system linked with the industry since the engineering area is where up-to-date knowledge is essential. As for the number of major courses in one field, two to five is deemed appropriate. The operational process of field-oriented admission and major course system is shown in [Figure 1].

Comprehensive analysis of education environment (the community & industry)		•Analysis of changes in the society and the structure of regional industry •Analysis of demand for students and employment status of graduates •Analysis of various requirements of the industry
Selection of major courses and development of education process		•Analysis of job duties by the industry(Required capabilities by each job duty) •Analysis of required contents of major education •Advice from in-depth education advisors, academic industry cooperation committee member, professors concurrently holding jobs in businesses, industry figures, etc.
Field-oriented admission		•Field-oriented admission •Guidance of basic courses for the first-years
Liberal arts and basic course education		•Education of basic subjects in each field •Liberal arts education focusing on development of well rounded personality •Language education needed in the globalized era
Student classification		•Based on the demand of the industry and student's desire •Based on a set of standards in the case of competition (student's aptitude for the job duty, possession of certificates, school grades)
In-depth education by major		•Development of practical textbooks and teaching materials •Purchase of experimentation equipments and audio-visual aids •Guidance of major-related student activities

Field training and employment in business under agreement		•Development of working capability through field training by each major •Employment in businesses under agreement and carrying out of job responsibility
Evaluation by graduates and the industry		•Level of satisfaction of major courses by graduates •Evaluation on the graduates' working capability by the industry

[Figure 1] Operation of free major program under CE

2. Orders regarding the number of students and contents of the education

Under the customized education system, schools receive orders from the industry regarding contents of the education and the number of students. In more detail, the industry gives orders to school regarding the contents and level of education as well as the major and number of students, and when, in what field they are needed. The order is made in the form of "Customized Education Agreement" and "Letter of Request for the Number of Workers and Curriculum."

The categories of order specified in the "Letter of Request for the Number of Workers and Curriculum" are as follows.

☐ Fields or majors that need workers

☐ The number of workers in demand and the time they are needed

☐ The required contents and level of education

☐ Other special requirements

These orders by the industry are fully utilized as source of information in the process of operating the customized education system, such as in classifying students into majors, helping students with their employment, and establishing new fields and majors, education objectives and curriculums.

3. Curriculum development

Generally, there are two ways of developing curriculum for education of profession and skills: BBCA(Broad Based Curriculum Approach) and NBCA(Narrow Based Curriculum Approach). BBCA is aimed at developing the job capabilities commonly needed in various working areas, while NBCA focuses on the development of professional capabilities needed in a certain area. Of these two approaches, NBCA is the one applied in the customized education system. [Figure

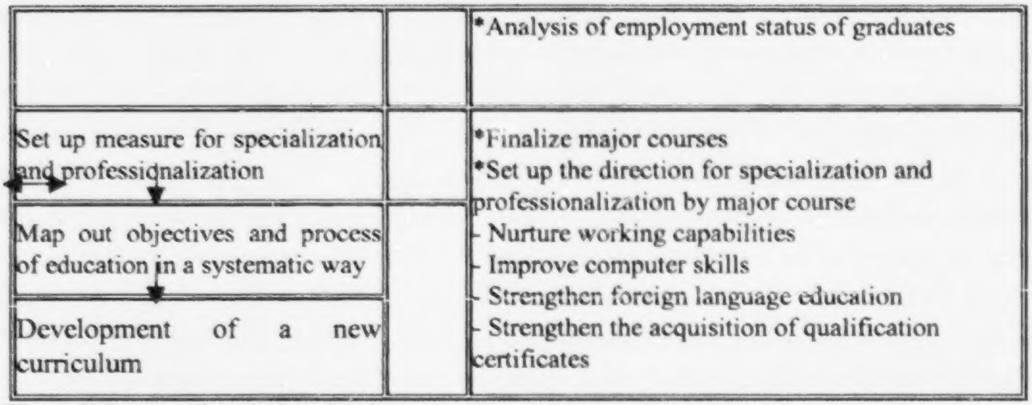
2] shows the characteristics of customized education, in this sense, in comparison with existing education methods.

existing education		customized education
*applies BBCA		*applies NBCA
*focuses on development of basic capabilities required in a group of working fields		*focuses on development of professional capabilities required in a certain field
*broad range of education contents		*narrow range of in-depth education contents
*supplier-oriented curriculum		*customer-oriented curriculum
*curriculum centered on theoretical contents of subject		*curriculum centered on the practical job responsibility on working sites

[Figure 2]Characteristics of existing education and CE

The general process of curriculum development of customized education is shown in [Figure 3].

Establishment of a curriculum improvement committee		*Composed of professors and members of academic-industry cooperative committee *Industry figures in each major field participate
Analysis of current curriculum		*Review on appropriateness and the extent of overlap *Comparative analysis with similar majors in other colleges
Analysis of the demand of the industry		*Analysis of job duties and working areas *Survey on the industry and analysis of requirements


•Analysis of employment status of graduates
Set up measure for specialization and professionalization
Map out objectives and process of education in a systematic way
Development of a new curriculum
•Finalize major courses
•Set up the direction for specialization and professionalization by major course
- Nurture working capabilities
- Improve computer skills
- Strengthen foreign language education
- Strengthen the acquisition of qualification certificates

[Figure 3] Process of curriculum development

4. Student classification by major course

Under the customized education system, the college only decides the quota of each field upon entrance of new students and after a certain period decides the quotas for major courses. When the school sets quotas for major courses, some factors are considered, including trends of recruitments and the number of workers demanded by the industry, current employment status of graduates, the wish of student, and the number of students returning to school after temporary absence.

Once the quota for each major is set, the next step is to match students with majors so that they can take in-depth major courses. This process of matching students with majors is called student classification process.

Students go through classification process one or two semester after their entrance into school, according to the credit rate of basic subjects in each major course and characteristics of their majors. As for major courses that have strong characteristics of their own, generally students are classified one semester after their entrance. As for major courses that have less stronger characteristics, students are classified about two semesters after their entrance into college.

In matching students with majors, following standards are considered.

☐The requirements by the industry should be fully reflected.

☐Wishes of students(interest, future career path) should be considered. ☐Individual aptitude, specialty, talent of a student should be taken into account.

☐Possession of qualification certificates, working experience, the high school the student was graduated from should be considered.

☐Other factors worth of consideration should be reflected.

Prior to the classification of students, following process should come first.

☐ Guidance and counselling for student classification

- Characteristics and career paths of each major
- Trends of industrial and technological development
- Major customer companies and current employment status of graduates

☐ Gathering information on each student

- Personal information regarding aptitude, specialty and talent
- Possession of certificates of qualifications
- Working experience, the high school from which the student graduated

☐ Other factors

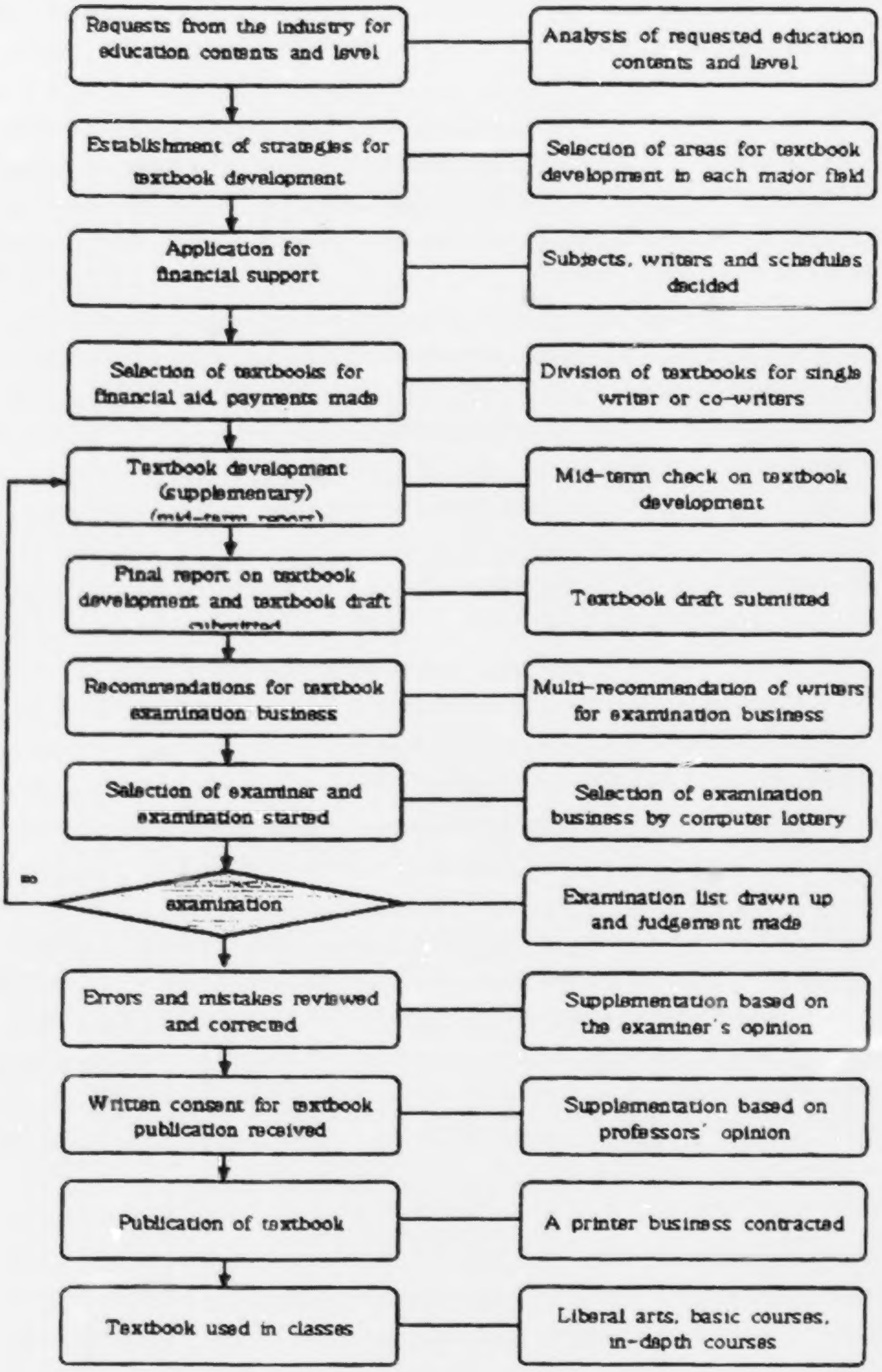
- Field trip
- Special lectures by industry figures, special lectures and briefing sessions by graduates in each major

5. Textbook development

Since customized education aims at meeting the demand by the industry, the contents of customized education have to follow the requirements by the industry. Therefore, the textbook, based on which the education is mainly given, should reflect the real conditions in the working sites, including the technologies in practical use. In general, the textbooks currently being used in colleges are not up to the level required by the industry in terms of quality, contents, scope, etc., thus highlighting the need for development of new textbooks.

Sometimes, the industry itself develops textbooks and let school use them. However, in general, school develops textbooks of its own, reflecting the requirements of the industry. In this case, professors and industry figures may co-develop textbooks or textbooks developed by professors may confirmed or verified by the industry before being put into use.

In developing textbooks, certain standards for the process and method need to be put in place. The textbook development process in Yeungjin Junior College is shown in [Figure 4].


Requests from the industry for education contents and level
Analysis of requested education contents and level
Establishment of strategies for textbook development
Selection of areas for textbook development in each major field
Application for financial support
Subjects, writers and schedules decided
Selection of textbooks for financial aid, payments made
Division of textbooks for single writer or co-writers
Textbook development (supplementary) (mid-term report)
Mid-term check on textbook development
Final report on textbook development and textbook draft submitted
Textbook draft submitted
Recommendations for textbook examination business
Multi-recommendation of writers for examination business
Selection of examiner and examination started
Selection of examination business by computer lottery
no
examination
Examination list drawn up and judgement made
Errors and mistakes reviewed and corrected
Supplementation based on the examiner's opinion
Written consent for textbook publication received
Supplementation based on professors' opinion
Publication of textbook
A printer business contracted
Textbook used in classes
Liberal arts, basic courses, in-depth courses

[Figure 4] Textbook development for CE

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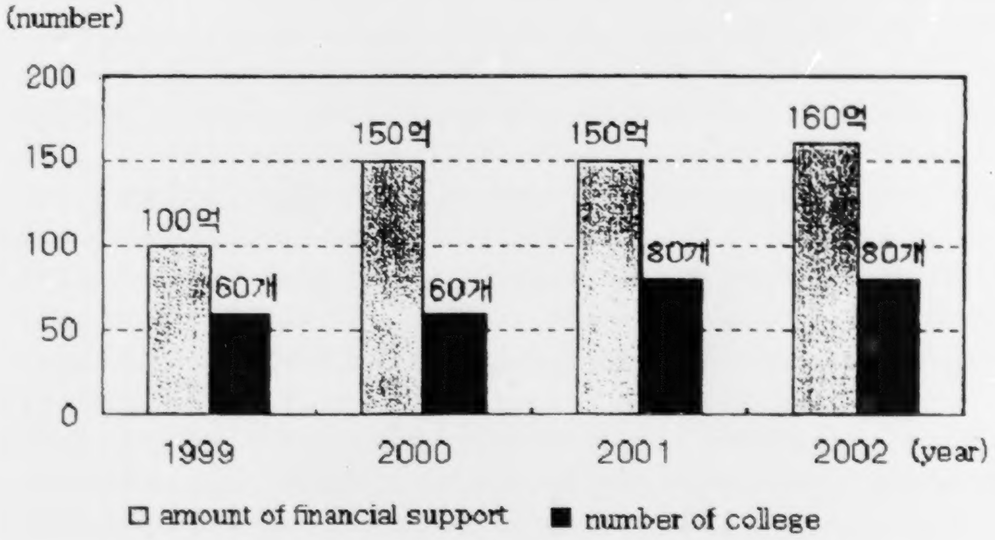
Ⅳ Operational status of customized education

1. Current status of promotion and spread of customized education

After Yeungjin Junior College and Daecheon College, designated as pilot colleges for Free Major Program during the years of 1996 and 1997 by the Ministry of Education, reported their successful operations of the Free Major Program, customized education was formally adopted by vocational colleges across the nation.

Highly recognizing the results of operation of customized education, the government has incorporated customized education into the government educational policy and has offered financial support to colleges with customized education system since 1999 in order to promote and spread the system. The amount of financial support for operation of customized education and the number of supported colleges for the past four years are shown in [Figure 5].



[Figure 5]The amount of financial support for CE and the number of supported colleges

The financial support by the Ministry of Education and Human Resources Development has the aim of establishing academic-industry partnership relations that can accomodate drastic technological changes in the industry, which will ultimately lead to cultivation of the workforce

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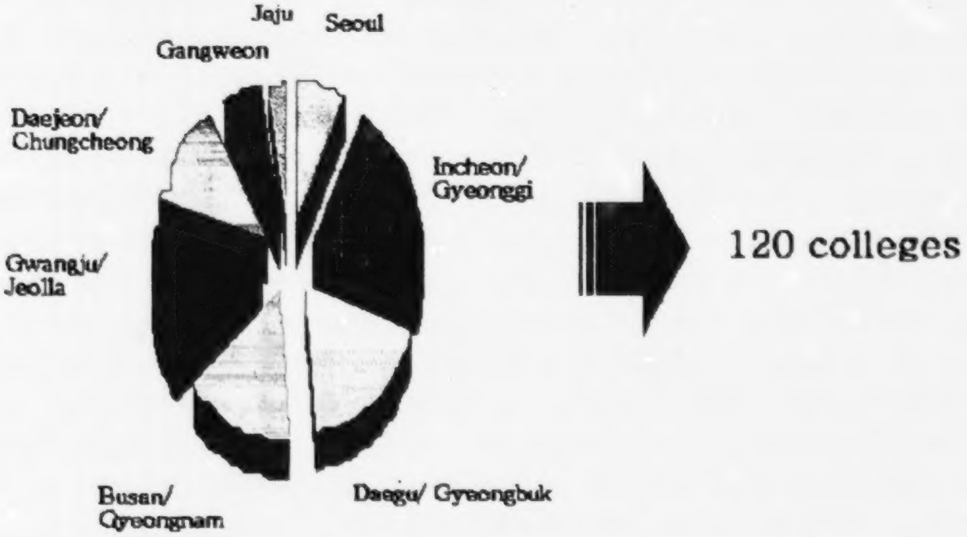
with high capability of adjusting to working sites. The key support areas include development of textbooks and education programs based on orders(agreements) from the industry and acquisition and replacement of customized education related facilities and equipments.

Meanwhile, the Customized Education Promotion Council was launched in July 5, 1999 as a nationwide organization and since then the Council has actively held seminars and workshops on customized education. As of September 2002, the Council has 120 vocational colleges as its members.



[Figure 6] Status of member colleges of the Customized Education Promotion Council

2. Analysis of operational performance of schools with customized education

A survey was conducted toward vocational colleges across the nation for analysis of operational performance of schools with customized education during five years(1998~ May,2002). Among the total of 159 vocational colleges, 127 participated in the survey. Results of the survey are as below.

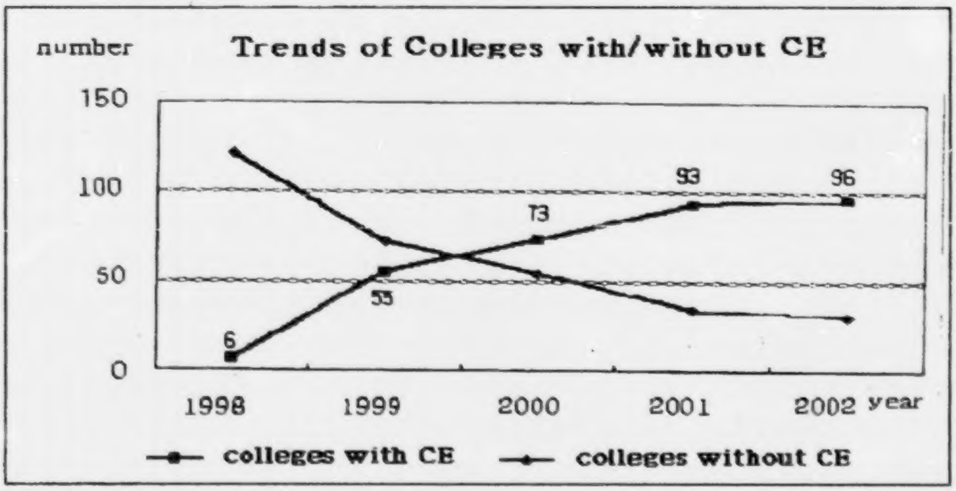
1) Trends of colleges with customized education

Of the total 127 responded colleges, only six colleges or 4.7% were found to have implemented customized education in 1998. However, since then, the number has dramatically increased and, as of the year 2002, 96 colleges or 75.6% are operating customized education.

<Table 1> Number of colleges with/without CE

year	1998	1999	2000	2001	2002
colleges without CE	121 (95.3%)	72 (56.7%)	54 (42.5%)	34 (26.8%)	31 (24.4%)
colleges with CE	6 (4.7%)	55 (43.3%)	73 (57.5%)	93 (73.2%)	96 (75.6%)
total	127	127	127	127	127

[Figure 7] Trends of colleges with/without CE



2) The quota of students under customized education

The quota of students under customized education has been on a steady increase since 1998 and, as of the year 2002, 85,319 students or 34.8% out of the total 245,274 students in surveyed colleges are found to be under customized education.

<Table 2> Number of students under CE

year	1998	1999	2000	2001	2002
students under CE	25,565	56,361	76,616	82,854	85,319
total enrolled students	217,147	233,479	238,740	244,721	245,274
proportion of students under CE out of total	11.8	24.1	32.1	33.9	34.8

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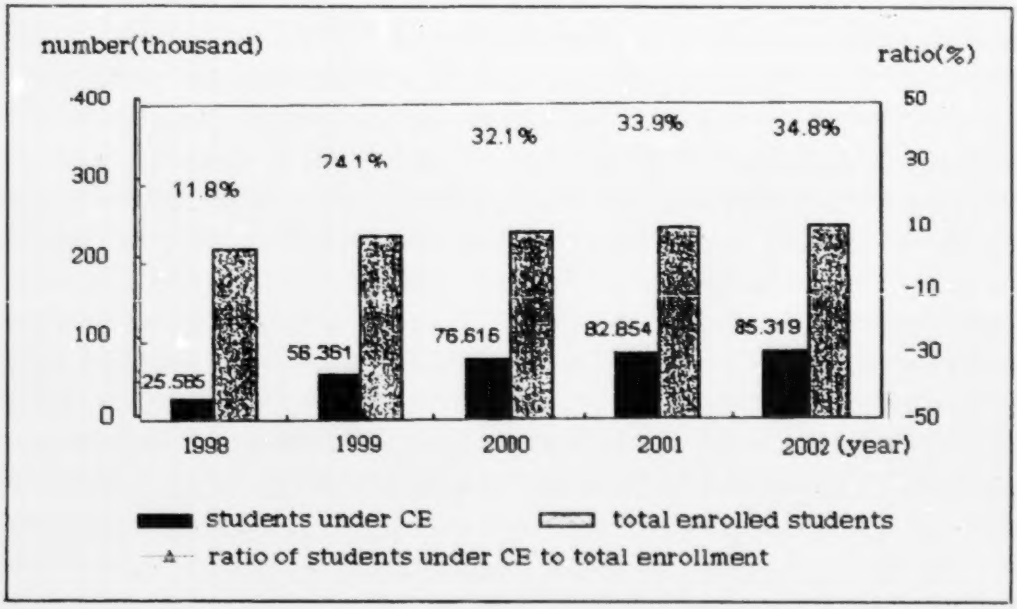

[Figure 8] Quota of students under CE

3) Number of programs(majors) under customized education

According to the results of the survey, there are a total of 1,050 programs(majors) under customized education and an average of 12.7 majors are under customized education in each college.

<Table 3> Number of programs(majors) under CE

year	1998	1999	2000	2001	2002
total number of majors	260	661	998	1,026	1,050
number of majors per school	11.8	11.2	11.7	11.3	12.7

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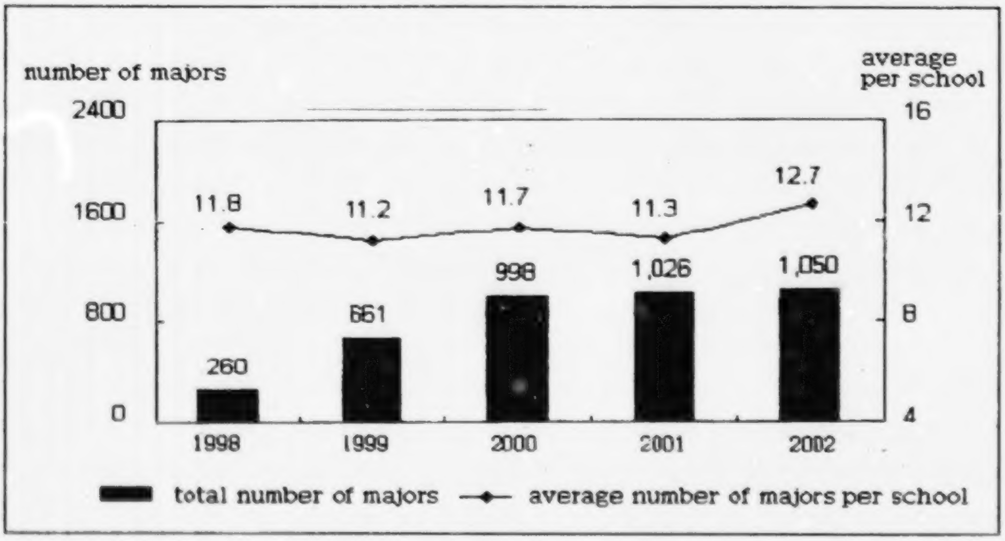

[Figure 9] Number of programs(majors) under CE

4) Number of businesses in academic-industry partnership relations

As a result of analysis on the number of businesses in academic-industry partnership relations, colleges with CE were found out to be securing far more partnership relations with businesses than colleges without CE were.

In addition, it was found out that the college with customized education has a growing number of businesses in partnership relations each year, which shows that establishment of close partnership with the industry is essential for school to effectively implement customized education.

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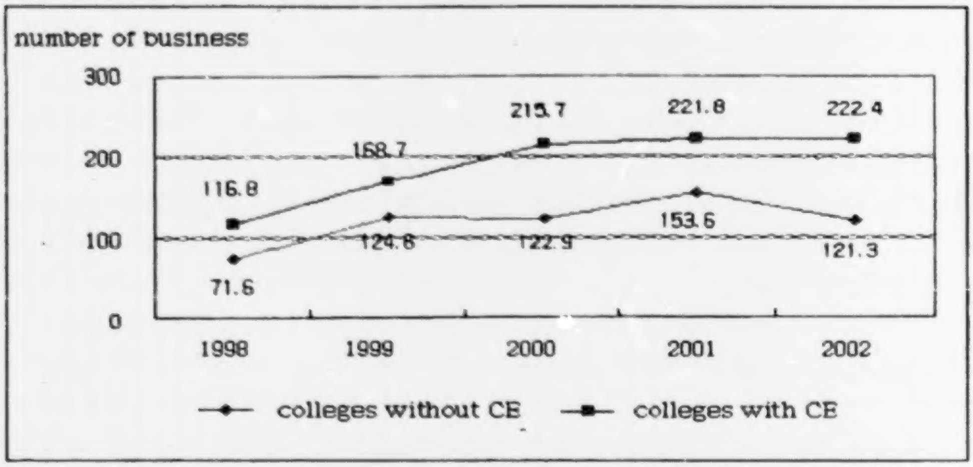
<Table 4> Ratio of businesses to school in academic-industry partnership relations

year	1998	1999	2000	2001	2002
colleges without CE	71.6	124.6	122.9	153.6	121.3
colleges with CE	116.8	168.7	215.7	221.8	22.4



[Figure 10] Ratio of businesses to school in academic-industry partnership relations

5) The number of members of academic-industry cooperative committee

According to the survey, colleges with customized education were also found out to have far more members of academic-industry cooperative committee than colleges without customized education have. In addition, while the college without customized education has had a sharply falling number of academic-industry cooperative committee members since 1999, the college with customized education has had a fast growing number of academic-industry committee members. If all numbers by the end of the year added, the number of members for colleges with customized education is estimated to further increase in 2002, compared with the previous year.

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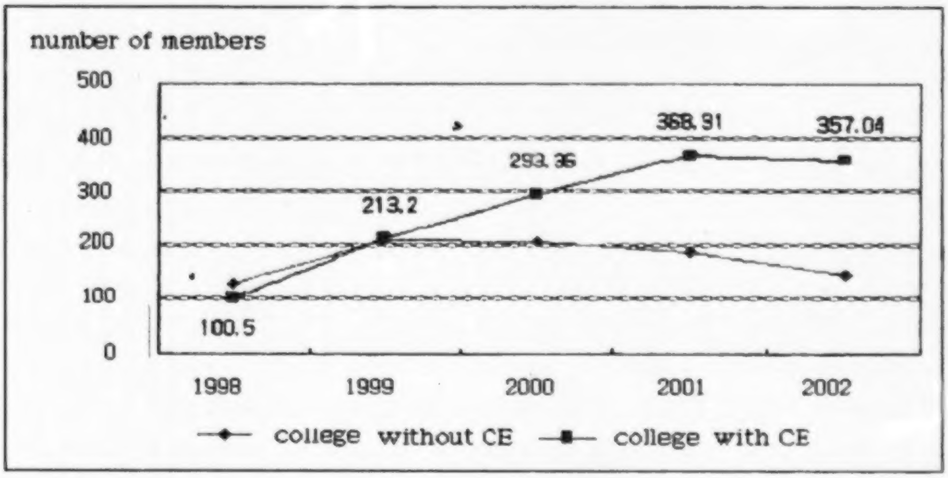
<Table 5> Average number of members of academic-industry cooperative committee per school

year	1998	1999	2000	2001	2002
colleges without CE	129.9	210.1	204.4	186.4	147.1
colleges with CE	100.5	213.2	293.4	368.3	357.0



[Figure 11] Average number of members of academic-industry cooperative committee per school

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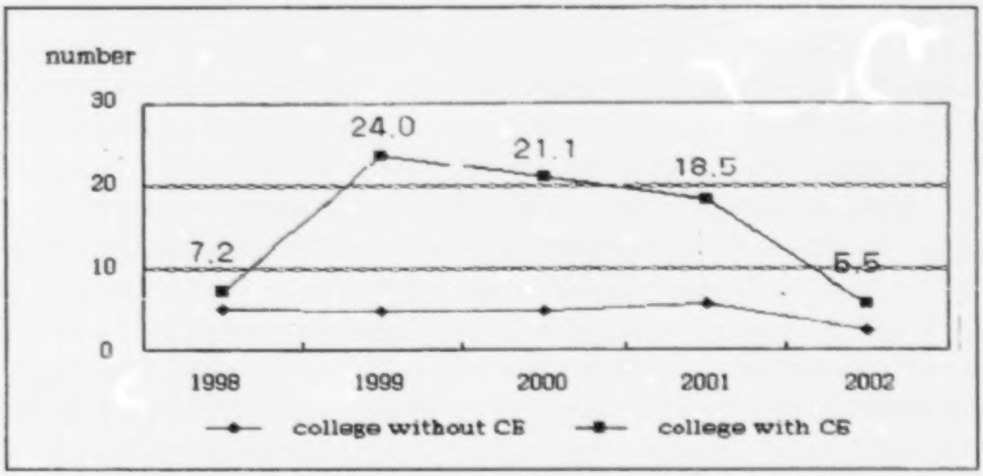
6) Textbook development

As for textbook development, a college without customized education has developed an average of 4.4 each year for the past five years, while a college with customized education has developed 15.3 each year during the same period. It appears that the annual number of textbooks developed by colleges with customized education has rather fallen since 1999. However, considering the facts that the existing textbooks were used for a certain period and that the figure of 2002 is based on the amount accumulated only until May, it is concluded that textbook development has been quite facilitated since the introduction of customized education.

<Table 6>Average number of textbooks developed by school

year	1998	1999	2000	2001	2002	average
colleges without CE	4.8	4.7	4.7	5.6	2.4	4.4
colleges with CE	7.2	24.0	21.1	18.5	5.5	15.3



[Figure 12] Average number of textbooks developed by school

7) Number of businesses under agreement

The average number of businesses under agreement for order per each college has been on a slightly downward trend since 1998.

<Table 7> Number of businesses under order agreement per school

year	1998	1999	2000	2001	2002
number of businesses	5,672	10,294	10,823	10,835	9,667
average number per school	218.2	156.0	124.4	119.1	132.4

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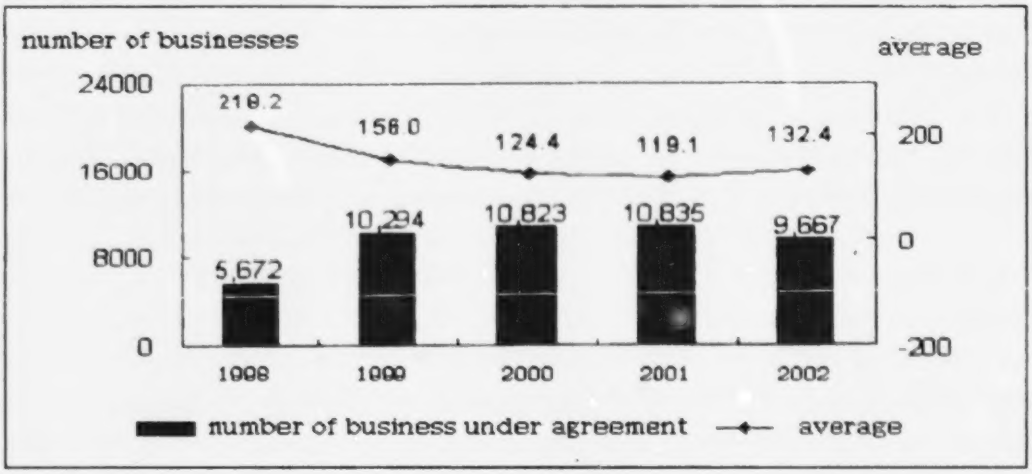

[Figure 13] Number of business under order agreement per school

8) Number of students requested

The average number of students requested under agreement per school each year has been stabilized on a slightly downturn trend since 1998.

<Table 8> Number of students requested per school

year	1998	1999	2000	2001	2002
number of students requested	11,099	21,699	25,169	21,711	20,241
average per school	426.9	333.8	289.3	243.9	281.1

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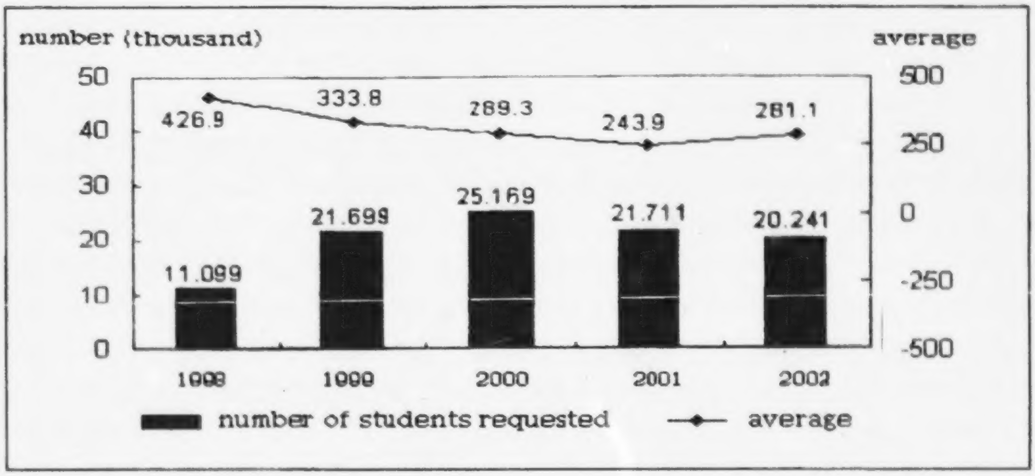

[Figure 14] Number of students requested per school

9) The rate of graduates' employment in businesses under agreement

The rate of graduates' employment in business under agreement recorded 35.1% in 2000 and rose to 38.0% in 2001 and to as much as 51.8% in 2002.

This increasing number carries a significant meaning since it is the result of customized education in place.

<Table 9> Rate of employment into business under order agreement

year	2000	2001	2002
rate of employment into business under agreement	35.1	38.0	51.8

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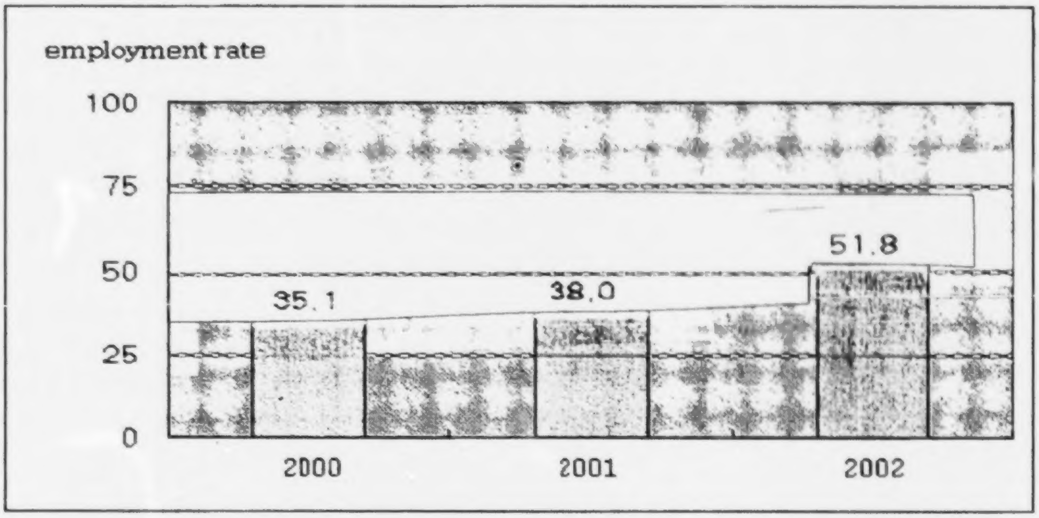

[Figure 15] Rate of employment into business under order agreement

10) Total employment rate

As for the average annual employment rate, colleges with customized education have recorded 85.5% for the past five years, while colleges without have recorded 80.0% during the same period.

<Table 10> Employment rate of the total college graduates

year	1998	1999	2000	2001	2002	1998~2002 (average)
college without CE	78.4	78.8	85.3	81.1	76.3	80.0
college with CE	84.2	82.4	87.8	87.4	85.6	85.5
total	78.7	80.5	86.9	85.9	83.5	83.1

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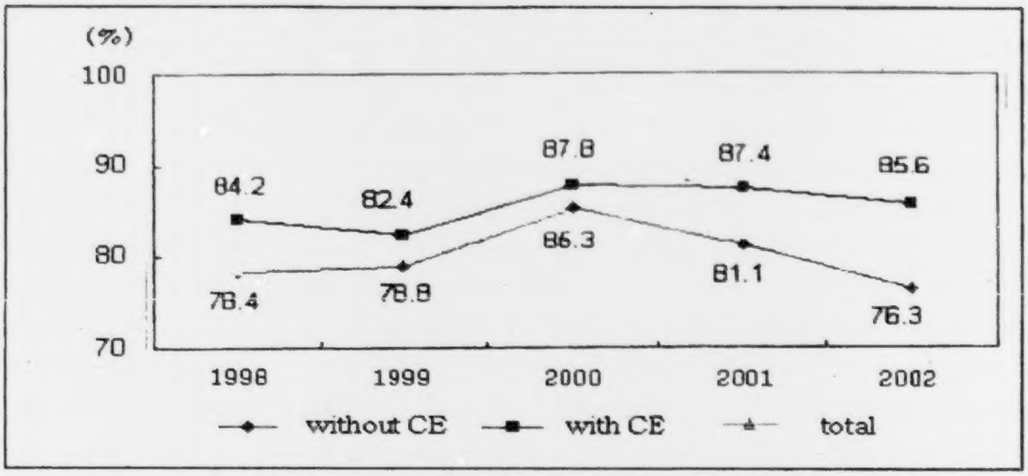

[Figure 16] Employment rate of the total college graduates

In particular, the employment rate of graduates from colleges without customized education has plummeted since 2000, further widening the gap of employment rate between colleges with customized education and colleges without.

11) Operational performance of improvement education

As for the operational performance of improvement education, which aims at enhancing job capabilities of employees in the industry, the number of programs and the number of workers to be supplied have increased overall since 1998. By the end of this year, the figures are likely to further increase.

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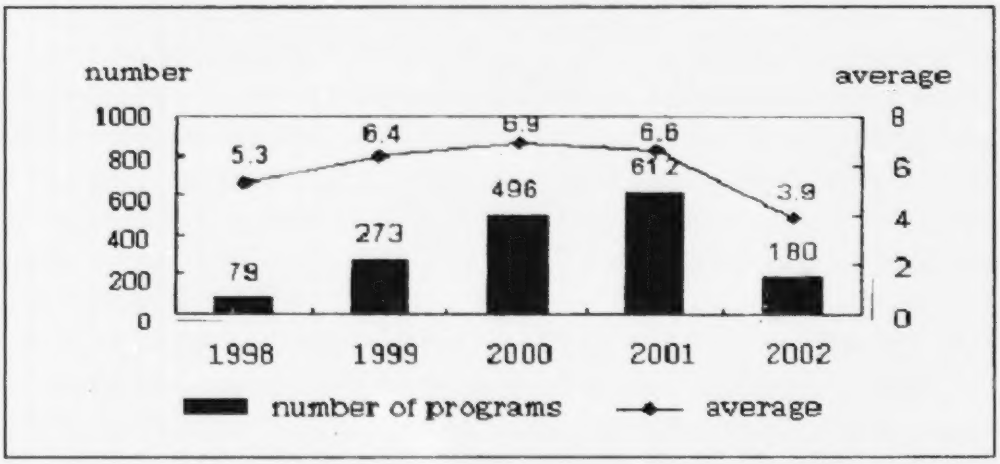
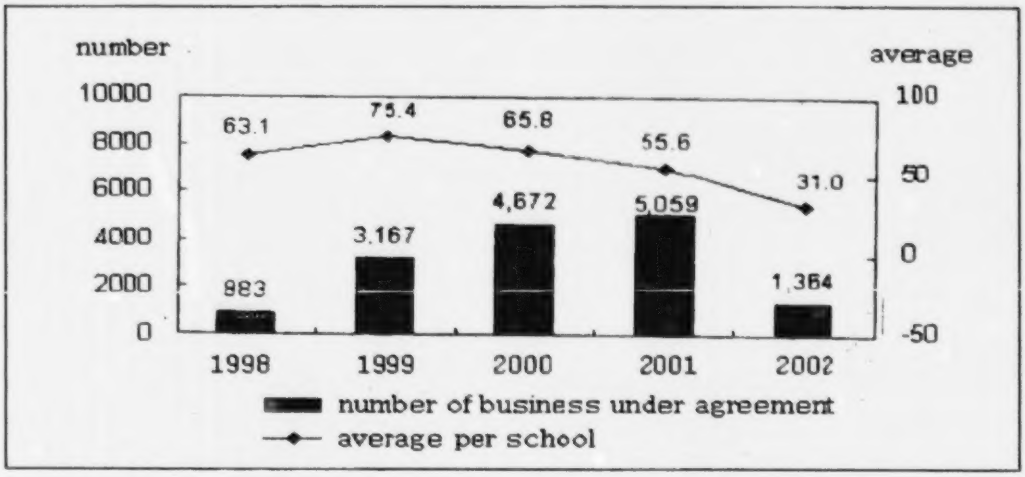
<Table 11> Operational performance of annual improvement education

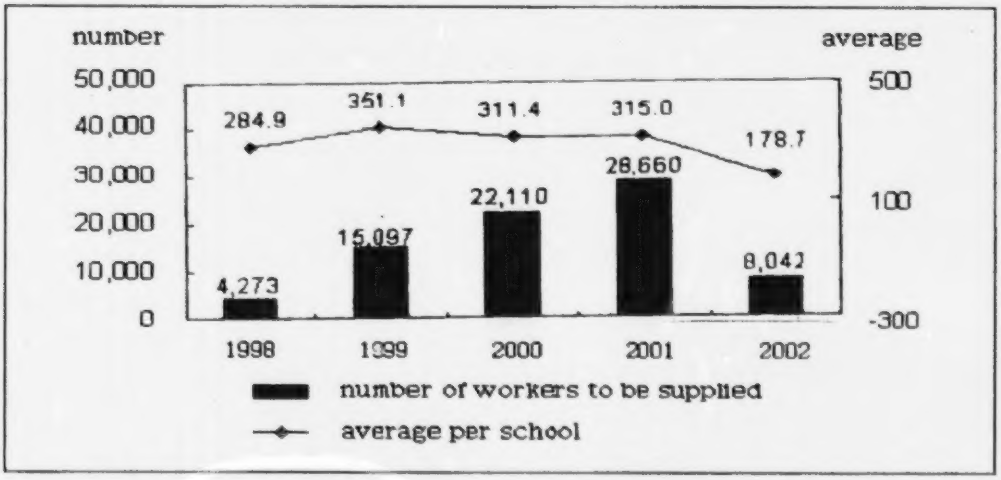
year	1998	1999	2000	2001	2002	total
total programs	79	273	496	612	180	1,640
average per college	5.3	6.4	6.9	6.6	3.9	16.7
firms under agreement	883	3,167	4,672	5,059	1,364	14,836
average per college	63.1	75.4	65.8	55.6	31.0	154.5
workers to be supplied	4,273	1,097	22,110	28,660	8,042	78,251
average per college	284.9	351.1	311.4	315.0	178.7	815.1



[Figure 17] Annual number of improvement education programs



[Figure 18] Annual number of businesses under improvement education agreement



[Figure 19] Annual number of workers to be supplied

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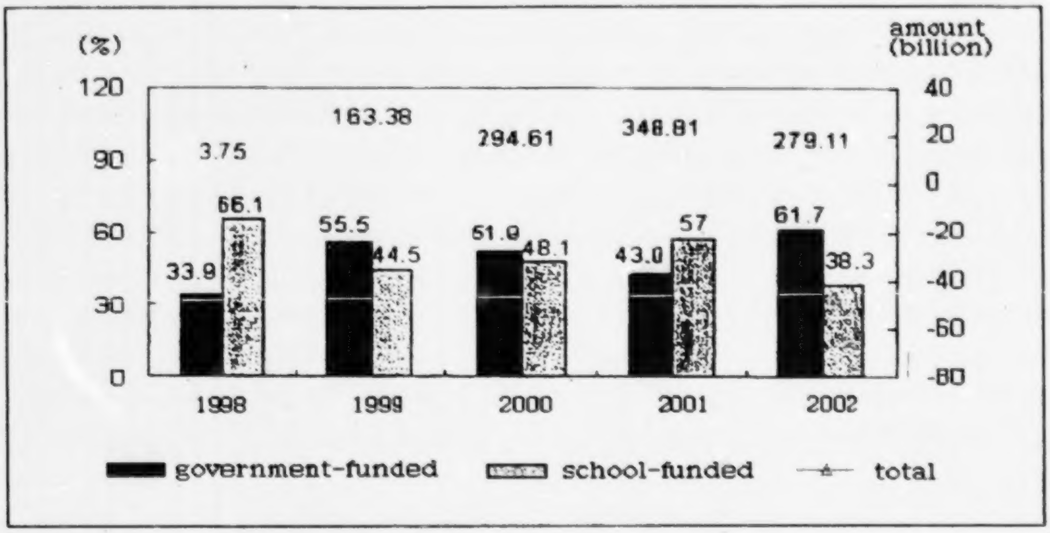
12) Budget execution

(1) Annual amount of executed budget

The amount of budget executed for promotion of customized education has risen each year from 1998 to 2001. In 1999 and 2000, the amount of national budget was slightly larger than the size of investment made by schools themselves. As for the national budget in 2002, it has not executed yet and thus, changes may happen in the process of execution.

<Table 12> Annual amount of budget execution (unit: KRW 1,000)

year	1998	1999	2000	2001	2002
national budget	127,423	9,074,405	15,296,382	15,010,805	17,228,200
(%)	(33.9)	(55.5)	(51.9)	(43.0)	(61.7)
investment by school (%)	247,985	7,264,147	14,165,050	19,870,906	10,682,907
total	375,408	16,338,551	29,461,432	34,881,710	27,911,107



[Figure 20] Annual amount of executed budget and the ratio of the government fund to school fund

(2) Trend of changes in budget execution by category

Looking into each category of budge executed for implementation of customized education for the past five years, spending on purchase of education equipments took account of 51.2% out of total, textbook development, 15.0%, operation cost, 14.1%, others, 11.3% and curriculum development 8.4%. The rate of spending on purchase of equipments out of total has been on a steady decrease since 1998, while the rate of spending on textbook and curriculum development has gradually increased. This change in spending is interpreted to mean that while schools focused on securing facilities and equipments in the initial years of customized education, they are gradually shifting their focus toward providing customized education with higher quality.

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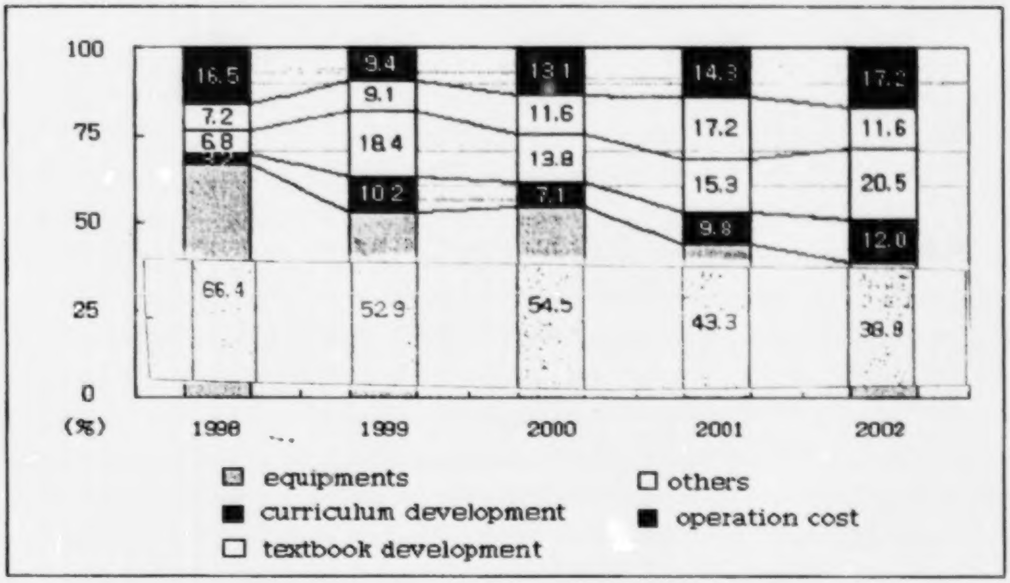
<Table 13> Trend of changes in budget execution by category

year	1998	1999	2000	2001	2002	average
curriculum development	11,949	1,658,025	2,084,607	3,414,089	3,346,850	2,103,104
(%)	(3.2)	(10.2)	(7.1)	(9.8)	(12.0)	(8.4)
textbook development	25,500	3,013,112	4,057,795	5,351,360	5,707,480	3,631,049
(%)	(6.8)	(18.4)	(13.8)	(15.3)	(20.5)	(15.0)
equipments	249,198	8,644,329	16,043,541	15,110,581	10,818,392	10,173,208
(%)	(66.4)	(52.9)	(54.5)	(43.3)	(38.8)	(51.2)
others	26,930	1,480,250	3,406,642	6,003,043	3,236,295	2,830,632
(%)	(7.2)	(9.1)	(11.6)	(17.2)	(11.6)	(11.3)
operation cost	61,831	1,542,834	3,865,846	5,003,423	4,802,090	3,055,205
(%)	(16.5)	(9.4)	(13.1)	(14.3)	(17.2)	(14.1)
total	375,408	16,338,551	29,461,432	34,881,710	27,911,107	21,793,642



[Figure 21] Trend of changes in budget execution by category

Ⅴ The future direction of the customized education system and conclusion

As mentioned above, a great number of colleges across the nation are in pursuit of the customized education, and the subsequent progress is reported as enormous. Still, a lot more needs to be done for the system to be more widely adopted among colleges and to be further systematized. The directions in which, I believe, the system should go are as follows.

Raised awareness and change in attitudes toward customized education

Despite the acceptance of the customized education as an official education policy by the government, the lack of awareness, in many cases, makes it difficult for customized education to be properly operated and expanded. Therefore, the awareness among the parties concerned should be raised regarding general theory of customized education including its concept, purpose, need, merit, and features. To help raise the awareness, researches, discussions, lectures,

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workshops and other seminal events should be organized. Also, those in the education community themselves should make efforts to understand the merits of and need for the new education system.

Comprehensive approach through a consultative body composed of the government, institutes, universities, and industries

For efficient management of customized education, reasonable operating system should be put in place. Currently, there is a consultative body consist of only industries and vocational colleges. Therefore, it is necessary to strengthen cooperation among industries, relevant government agencies and research institutes, thereby to set future direction, to establish management and operating system and to come up with the efficient ways for exchanges of human, financial resources and information in a more comprehensive manner.

It is necessary to pursue customized education based on the appropriate system established after analyzing the internal environment of each vocational college. The subjects for the analysis include capability of professors, curriculum, and lab facilities.

Some vocational colleges may blindly pursue the forms of customized education used by other colleges without thorough analysis of their internal environment. Others may not consider what should be done first in pursuing customized education. For the efficient pursuit of the customized education, colleges need to analyse professors' capability to run the new system, their curriculum's affordability of the system and availability of training facilities needed, in advance.

It is essential that education providers make sustained efforts to respond to the rapid changes in the society and technological trend of industries.

Customized education system was designed to make the education management more flexible by encouraging education providers to actively respond to changes in the society and technological trend. In line with this aim of customized education, the education providers need to make continuous efforts to create new courses, improve the existing curriculum or teaching methods, develop new textbooks and strengthen the cooperation with the industry.

Various forms of in-service training should be offered to professors.

In order to teach students practice of business, professors should be given the opportunities for hands-on experience in industries. There may be other ways to help students to be familiarized to the practical areas, for example, through the employment of specialists as professor, special lectures or hands-on experience given to students. Nonetheless, without professors equipped with practical experiences, the customized education can never be perfect. In order to embrace constantly changing needs of the society, it is essential for colleges to continuously provide various in-service training for professors.

Colleges need to have high-tech facilities and equipment and excellent education providers.

Customized education system was designed to help colleges to meet the changing needs of industries. For the goal of the customized education to be achieved, colleges should make sustained efforts to secure high-tech facilities and equipment and excellent education providers.

Industries and colleges should share the facilities and equipment, and the colleges should expand their support for industries.

The cooperation between industries and colleges is the prerequisite to the success of customized education. As a part of the cooperation, industries and colleges should share the facilities, equipment and software. As for the expensive high-tech facilities and equipment, particularly, the sharing will lead to substantial cost saving for both parties.

Given the fact that colleges can enhance the efficiency of customized education by understanding realities and challenges facing the industry, they should not spare any support for industries. The supportive measures include provision of technological training, organization of special lectures and projects and operation of research institutes.

Colleges need to diversify the parties seeking customized education.

Currently, only individual industries agree to pursue customized education. Those agreeing on customized education need to be expanded to include related associations, local governments, and education offices of provinces and cities. This is essential to expanding the base and effectiveness of customized education.

Colleges should develop and carry out various extra courses in consideration of the industrial environment and local communities,

Customized education has been focusing on two years of official course of colleges. Given the decline in the number of students applying to vocational colleges, it is necessary for colleges to expand customized education program to absorb those out of school in the local community. To that end, colleges need to actively develope and carry out various types of short- and long-term courses: customized courses depending on the industries the applicants work for, and weekend courses for those who have no time during weekdays. Other forms of programs such as workshop, seminar can be considered. Through such efforts, colleges will be able to differentiate themselves from others and maximize the effect.

It is essential that colleges secure financial support from industries for customized education.

It has not been quite long since customized education was introduced to colleges in Korea. Therefore, only a few colleges are receiving financial support from specific companies. So far, the support from industries, if any, has been limited to the donation of equipment and software as a part of academic-industry cooperation. In order to receive more support from the industry, colleges need to develop education program needed by industries. Also, they should stage a nation-wide campaign to make the industries understand that the success of the customized education will eventually benefit them most. For such campaign to be successful, the government should extend incentives including tax benefits to the companies which adopt the customized education program or participate in the process of curriculum or textbook development.

It is necessary for the government to gradually expand its financial assistance for customized education.

Over the past four years, the government has provided financial assistance for customized education. However, it should further expand the assistance to encourage more colleges to carry out customized education. Particularly, colleges which has just adopted customized education will need substantial amount of investment in order to prepare competitive and differentiated courses for major and to create an environment where students can receive on-the-job training through cooperation with industries. Therefore, the expanded financial support for more colleges by the government is essential.

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Case 7-3 : Korea

A Case Study on the Business Learning System for Bringing Up a Specialist in Korea

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Abstract

Applying an individual's knowledge for their occupational life span is not easy as it sounds. This is mainly due to the high demands of the constantly changing situations of today's knowledge based society. For many people it is required for them to be constantly learning in an ever-changing work environment. Certain organizations rate succession based upon ones' credits or levels of competency. In Korean organizations, an investment in education may or may not be specifically related to an organization's core business field. In some cases, organizations give their support to non-work related education that is more geared towards a workers personal improvement.

In most organizations, advancing to be specialist in their work field is highly desired by the employee and the company as well. To be upgraded to the level of a specialist in an organization however requires more than an educational program alone. Organizations must also have the strategies or a game plan, which leads their members to obtain higher levels that are pursuant to the goals of the organization. The question is "How to educate the individual of an organization that is self-fulfilling along with being beneficial to the organization?" Some of the Korean organizations that I found dived into educational programs which members of organization learn

from about 5 different categories and then is streamlined by the needs of the individual. This indicates various specialists who could meet the requirements of the organization and individual alike. The levels direct the individual towards the path to becoming specialist by the means of the educational requirements. This path of ones education, which is called TRM (Training Road Map), exists inside the organization. Not only does it provide the specific technical and targeted educational needs in order for advancement; it also provides a social side of education that enriches adults and society as well.

TRM is defined into 5 different categories: 1) Continuing adult education, 2) Company specific education, 3) Business division education, 4) Functional (direct job related) skill related learning and 5) Self-development. The reason for diverse education in this case is it covers many aspects that the specialist in the organization needs. Not only education for directed towards their specific job per say, but also is require for improvement or development of a more rounded individual. Such examples would be classes in communication, leadership or even classes in domestic market vs. oversea markets.

TRM has systematically organized all these educational categories into a single and complete model. Through this system individual can outline their education requirements in advance. This path enables an individual to identify the proper direction for long term self-improving. In addition, this will perhaps help to increase an individual's passion for work as well as inspire them to up grade their education.

For example, if this TRM system finds practical use in an IT environment, an organization could possibly be effective in applying a knowledge management system or career development system. It is notable that an organization can only benefit from the personal education of the individual. Saying all of this, the TRM system may allow the individual to lay a foundation that is not only pursuant to the goals of management but also achieve these individual aspirations in a more efficient and effective manner.

With the advent of knowledge-based information society, various discussions on human resource development and life-long education are attracting attention from around the world. Discussions on this concept are also actively taking place in Korea. Korea has recognizes the importance of the human resource development and life-long education now as well as in the future. One of reasons behind this discussion is that once acquired knowledge cannot last forever and the life cycle of knowledge is getting shorter and shorter in this knowledge-based society. The active discussion on this issue also represents the increasing importance of finding, transforming and making use of the needed knowledge amid the flood of information and knowledge.

It is not easy to apply what one has learned from school to his or her work place. In these ever changing times obtained knowledge alone is not sufficient enough to sustain one's career for a lifetime. Nowadays, many people have to adapt to society's fast changing environment and are constantly required to acquire knowledge. The success of a company, in particular, is greatly dependent upon the capacity of individual employees. Thus, it is increasingly necessary for a company to constantly develop capabilities of employees in order to survive. Individual workers should also make sustained efforts for a self-development in order to survive in a company. Corporate education is one of the important pillars of vocational education and training in Korea. A distinguished characteristic of business education in Korea is that companies are bearing the expenses of education, which seems less relevant to individual's career taking the responsibility of considerable part of individual's capacity for development.

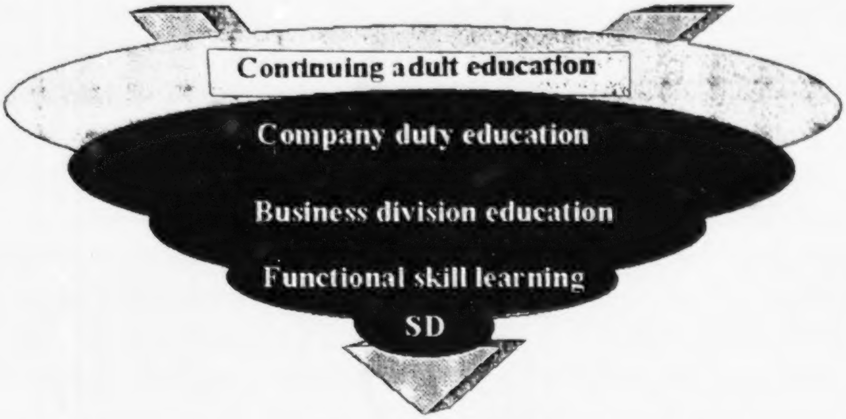
Companies try to retain as many specialists with high capability as possible since it is considered that the success of a company is greatly dependent on not only individual capability related to the business but also on how much talented human resources the company has. Individuals also want to continuously seek knowledge and information that are needed to them so as to secure their future career path. In other words, individuals are also required to put efforts to enhance their value and become specialists. Ultimately, the main focus here can be found in the word 'specialist'. Companies want their employees to obtain knowledge through the education program they provide, share the knowledge with others and create business profits with that knowledge. On the other hand, individuals hope for an opportunity to learn something, which will prepare sound foundation on which they can build their career and secure their stable future.

The problem is how to satisfy desires of both the company and an individual. While the individuals within a company demand various types of education, it is not easy to provide education to each individual's taste and it is certainly not easy to find the common denominator among their different educational needs.

A company's intention to provide various forms of education in Korea is not just limited to the traditional viewpoint that company should take responsibility of their own employees. When a company intends to bring up a specialist within the company, it demands for more than just simple performance of one's duty. The specialist is required not only to retain the expert knowledge and technique that are related to his or her own field of business, but also to have communicate skills for dealing with related departments and display leadership to subordinates based on the business experience. Businesses in Korea provide not only educations on work skills, communication skills and how to display leaderships but also on workplace etiquette and even life planning method. In this respect, it can be said that the content of the business learning in Korea contains a wide variety. The various forms of education can be classified into five categories as shown in the figure 1. Training Road Map (TRM) consecutively displays the content of educations according to special characteristics of a company. Basically, companies come to bear a lot of expenses to 'bring up' specialists. They start with an assumption that specialist must have expert business knowledge, passion and communication skills, which are essential to the organization.

Korean businesses provide subjects such as: continuing adult education, company duty education, business division education, functional skill learning and self-development. First, the continuing adult education provides a program that is needed according to individual's development stage regardless of their profession. This includes programs related to general continuing education such as education on current economic trends and financial technology, which are the basically required for all adults, as well as workplace etiquette which is usually offered at the beginning of one's career. In fact, every adult requires such continuing education, however, it is not easily provided with the education in schools or other educational institutions.

Figure 1: classification of education for bringing up specialists


Continuing adult education
Company duty education
Business division education
Functional skill learning
SD

Specialist =

Expert knowledge is based upon basic + Communication skill + Passion

Second, the company duty education offers programs that provide an opportunity to obtain the knowledge on the business field of its own. Each business engages in activities in various fields so as to achieve desired outcome and naturally, businesses are in need of specialists of various areas. However, it is inevitable that businesses call for a common education on an individual as a member of an organization without regard to one's working areas. Individuals should also receive the common education as long as he or she wishes to engage in the business. For example, an individual who works in an automobile manufacturing business must keep up with related information such as current trends in the world auto market, M&As, domestic situation of economy and auto market. Even though the individual is working in a field that is irrelevant to actual automobile production such as education or personnel. This is what is basically required of a member of an organization.

Third, business division education provides common education to each business division. These divisions are operated by units such as: support (administration), sales and manufacturing. These activities in each division unit require relatively common knowledge. The business division education forms the basis of the education for the enhancement of ability to perform one's duty with in a company. Generally, content of the education is similar to those provided in universities and vocational training schools.

Fourth, what individuals in an organization need a concrete education that directly helps improving ability to perform one's duties. While business division education deals with broad range of contents, the functional skill learning should provide instrumental and realistic content. This can be interpreted differently by the business. Thus, the functional skill learning is usually provided by on-the job training (OJT) method. Lastly, individuals should continuously strive for a self-development. Of course, the content of self-development can be selected according to an individuals' tastes, however, businesses that bear education expenses can present the content of self-development education in advance. This shows the intention of business to induce self-development towards the direction of enhancing the performance of an organization.

The contents of education needed to bring up specialist vary indeed. Several businesses in Korea present a route which individual can become a specialist within an organization by arranging various educations. The TRM consecutively displays process of needed educations to become a specialist in the long run. Figure 2 is an example of the TRM.

The goal of the TRM is to provide members of an organization the route to become a specialist required by the business. Individuals can compare what they pursue and what businesses require by looking at the TRM. Through the process, individuals can understand long-term direction and businesses can put more enthusiasm in both work and education. Before drawing up the TRM, number and the level of specialist must be decided. The number of the TRM equals that of specialists and the level of specialist will decide the content of education in each TRM. One of the facts that must be examined by a business who wish to draw up the TRM is the development of an appropriate system that is designed to effectively carry out the TRM according to the special characteristics of the business.

Figure 2: Training Road map Sample

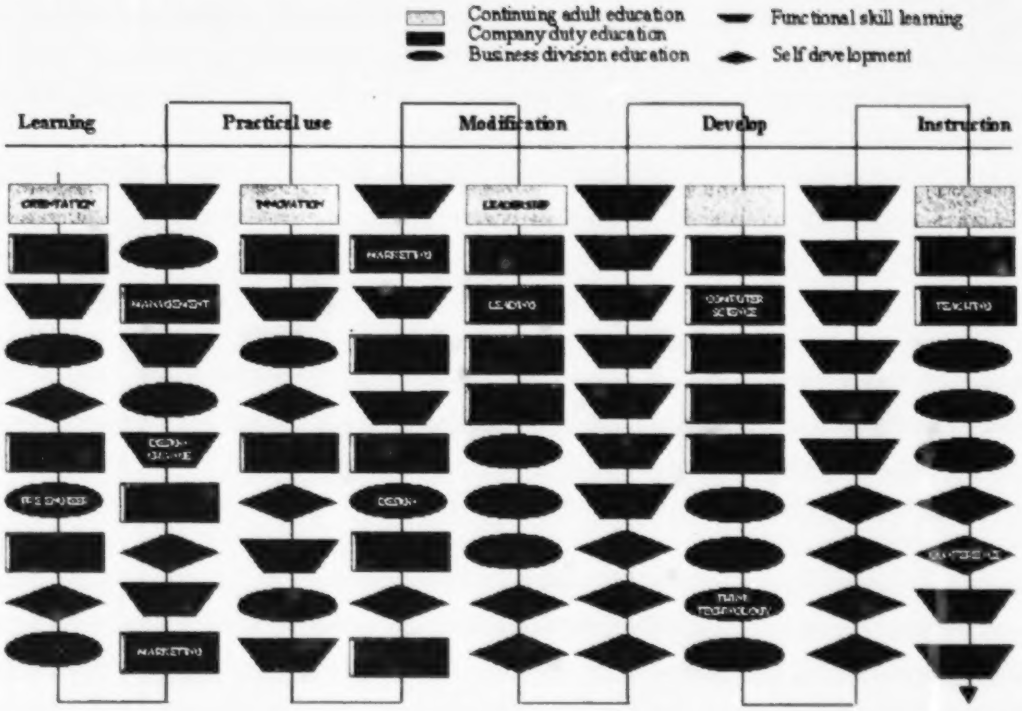

Continuing adult education
Company duty education
Business division education
Functional skill learning
Self development
Learning
Practical use
Modification
Develop
Instruction
ORIENTATION
INNOVATION
LEADERSHIP
MARKETING
MANAGEMENT
LEADING
COMPUTER SCIENCE
TEACHING
DESIGN
MARKETING

Figure 3: TRM and aspects of business learning

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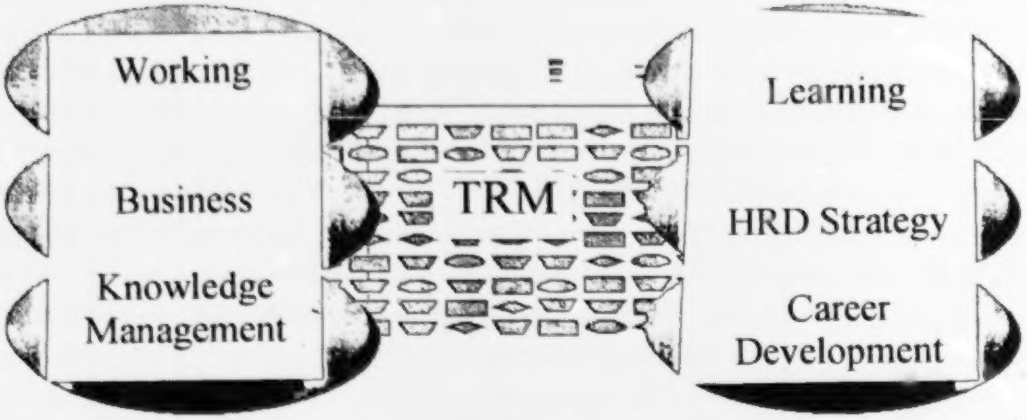
Aspects of business learning



The most effective method of using the TRM is the computerization of the TRM, which will allow individuals to see and check their TRMs on their screens. This is an effective application of individual career development educations and a knowledge management system. Further more, this will directly link management strategy with educational strategy from HR division and its execution. First, individuals can click on their TRM on a screen to obtain detailed information such as period, place, instructor and the content of the education. Individuals can obtain needed information and knowledge since the keywords are linked to business database allowing individuals to retrieve more detail information. Especially when storing up the contents of the functional information, which deals with education for improving the ability to perform one's duty. This information will be stored on a database to further contribute to the enhancement of business performance. The TRM under the IT environment will help select educational needs in line with management strategy under the limited education budget and resources. Ultimately, it can be said that the TRM is a connector between providing a standardized route in 'bringing up' the specialists within a business as well as satisfying the needs of both individual and business alike.

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